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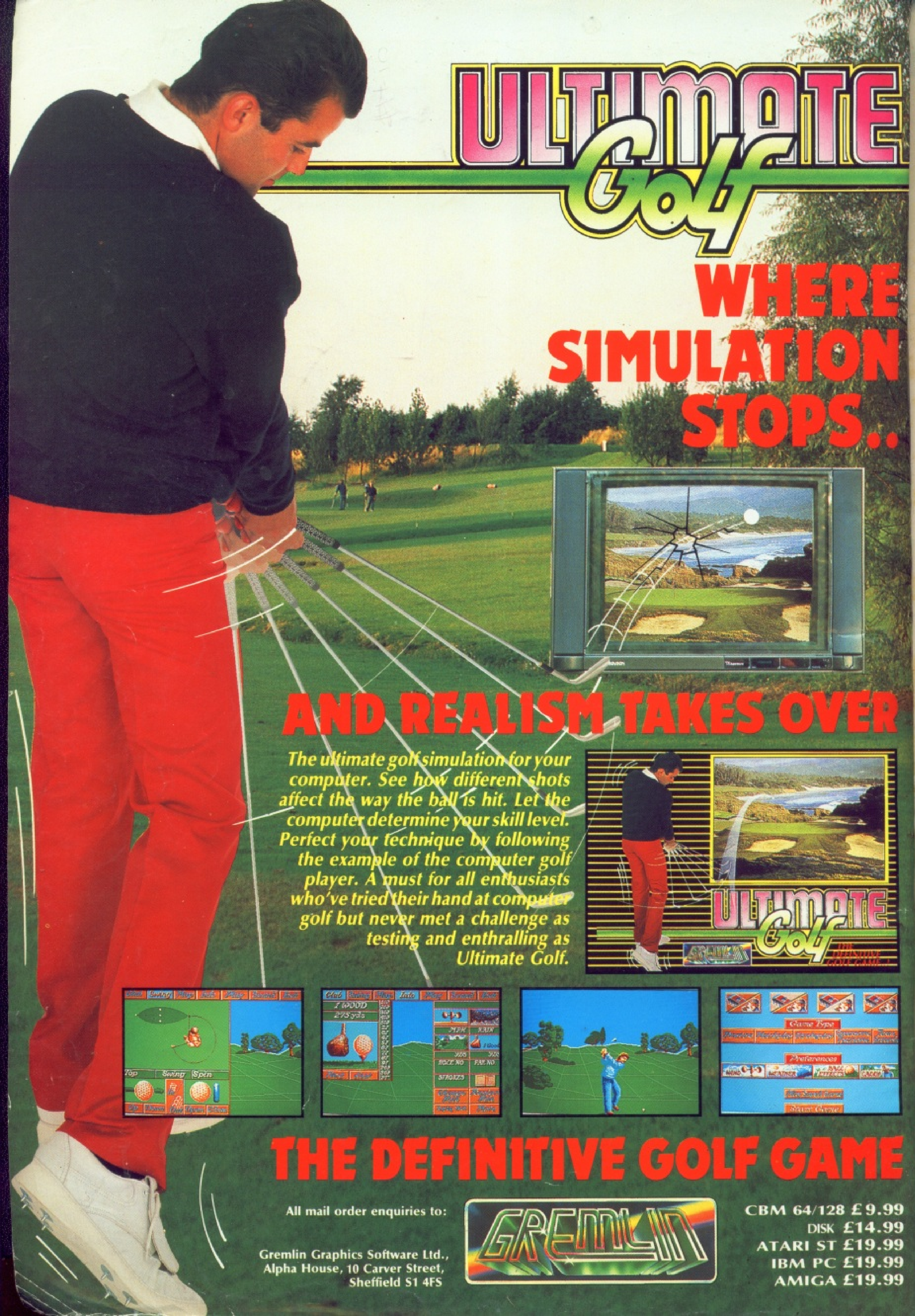
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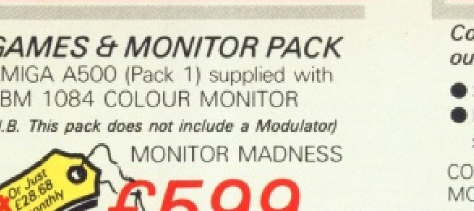

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Dear CCI Reader,

Commodore's new advertising campaign boldly goes where no computer company has gone before. It claims that there are 20,000,000 Commodore owners around the world! Well, that seems to me something of an interesting exaggeration. We know with reasonable certainty that CBM has sold over eight million C64s and before that the Vic 20 must have reached close to a million and a half. The PET another million? The 128 has also passed that magic seven figure mark and maybe the ill-starred C16 and Plus/4 together got to another million. Are you still counting? Well, the Amiga has now reached 650,000 and perhaps the Commodore PC range has sold around half a million. That makes about 14 million computers. A very big number in some 10 years but somewhat short of that 20 million.

Advertising claims, we all know, must be treated with caution. Maybe CBM's agency will call me and say that they included all those calculators that Commodore originally manufactured. But anyway you count it, CBM has made a huge amount of computers. Yet after all those computers and all that time selling them, Commodore's message at the latest PC Show was "We'll help you see things differently!" That too, no doubt, is advertising speak. What it means, I suppose, is that Commodore's computers are usable by people who would not immediately think of themselves as computer freaks. Certainly at the PC Show not only was Commodore's the largest and one of the most impressive Stands but the awed crowds seemed finally to have discovered the amazement that has struck everyone seeing the Commodore itself and the computers it creates. For anyone who has observed the ups and downs of Commodore over the years, it is a very pleasant feeling to find others, the sceptics and the innocent, as last realising that the name Commodre does stand for something important.

There may not be as many as 20,000,000 but there are an awful lot of us around the globe for whom Commodore has already made the world look a little different. From the evidence of the PC Show it won't be so much CBM's brash advertising but its brilliant computers which will bring that different vision to a whole load more. Isn't it good to feel that you were that far ahead of the game?

RH Jacobson

Antony H. Jacobson,
Managing Editor and Publisher.

WIN! AN AMIGA 500 FROM COMPUMART!

PAGE 36

GET A SPITTING IMAGE OF YOURSELF ON PAGE III!

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Inkwell's Amiga Light Pen

Inkwell Systems, manufacturer of high resolution graphics software programs for the Commodore 64, and 128 computers has announced the release of a new Amiga Light Pen and Driver. The Inkwell Model 184-A light pen, coupled with a transparent driver provides an easy-to-use, natural alternative for data entry.

The new Amiga Light Pen Driver works through CLI or Workbench in either interlace or non-interlace modes with Amiga's most popular mouse-driven programs. There is a "help" manual included on the disk.

The 184-A Light Pen is plug compatible with Amiga 500, 1000, 2000 and A2000 (German Version) computers. It is light weight and features two touch-actuated switches which, when used in conjunction with the new Amiga Light Pen Driver, can replace or be alternately used with the two-button mouse for the ultimate in data entry control.

The Amiga Light Pen Driver coupled with the 184-A Light Pen is intended for use with painting, drawing, free-hand sketching, CAD and other Amiga software programs.

Contact: Inkwell Systems, 5710 Ruffin Rd, San Diego, CA. 92123. Tel: (619) 268-8792.

Hang on Wall TV

THE SIZE of flat screen colour televisions, which has been hovering at three to four inches for the dislays, has taken a notable step upwards. Sharp of Osaka, in Japan, has just revealed the development of a 14-inch unit. The display is only 27mm thick (just over an inch) and can product pictures with more than 300,000 pixels (individual picture elements). This is roughly the definition produce by domestic video cameras, but less than European broadcast television standards (roughly 0.5m pixels). Thin film technology is used in this new liquid crystal unit, with pixel control transistors laid down over the whole screen area. The technology simplifies the control of individual pixels from addressing units on the edges of the screen. Sharp will say nothing about the price at which it will be sold, but it is likely to be considerably more than a conventional 14-inch colour tube. The television will go into mass production in the summer of next year. So by the autumn it can be assumed tha the first "hang-on-the-wall" sets will appear on the Japanese market.

Half price games

Special Reserve, a software club set up by Public Relations firm Inter-Mediates, claims to be offering its members the lowest overall prices for entertainment software. Most games in the club's catalogue of over 400 carefully-selected products are on offer to members at not much more than half price (less than half price if the post and packing charge is excluded). Annual membership costs £4.00 and includes three issues of Special Reserve's detailed Buyers' Guide, updates on new releases with each game bought, a folder for the Buyers' Guide and a membership card complete with privilege ordering number.

Contact: Special Reserve, PO Box 847, Harlow CM21 9PH. Tel: (0279) 726585.

Bond classic to set jet set pace

Domark has teamed up with Elite for the computer game version 1973 James Bond movie Live and Let Die.

Domark, the pioneer of the computer Bond games promises that Live and Let Die will be the greatest 007 success yet.

As no doubt you remember from the film you will know your ultimate goal is to put a stop to a looming human and political disaster, by destroying evil drug factors in a series of dangerous missions (you mean you don't? You didn't see it in 1973? Well, one Bond film is very like the rest anyway).

Its either James Bond in Live and Let Die or a Domark partner linking up to Elite's programmers.

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▶ BASIC 8

Unleash the hidden graphics power of your 128. At last, your Commodore 128 can rival the 16 bit micros! Imagine your 128 in 80 columns producing a resolution of 640 x 200 in mono and 640 x 192 in 16 colours without any additional hardware! (640 x 400 version available soon.) Sounds impossible? Not with Basic 8, the new graphics language extension.

Basic 8 adds over 50 Hi-Res graphic commands to C128 Basic. Just select one of the many graphics modes and draw 3-D lines, boxes, circles and a multitude of solid shapes with a single command. We've even added commands for windows, fonts, patterns and brushes.

To demonstrate the power and versatility of this graphics language, we have created Basic Paint, a flexible icon-based drawing application program. Basic Calc, a full featured spreadsheet and Basic Write a simple to use word processor with a multitude of fonts. Also included is an icon based desk-top utility which provides quick and convenient access to each of your own Basic 8 creations.

All this graphics potential is yours for **£34.95**, 64k Video RAM upgrade kit **£29.95** and The Beginners Guide to Basic 8 with disk **£19.95**. Basic 8 Tricks & Tips Volume 1 **£4.65**.

▶ 1541/71 Disk Drive Alignment Package

Problems with your disk drive? The alignment package reports the alignment condition of the disk drive as you perform adjustments. On screen help is available while the program is running. Includes features for seed and head stop adjustment. Allows you to test each full and half track as you realign the drive. Complete instruction manual on aligning both 1571 and 1541 drives. Even includes instructions on how to load the alignment program when nothing else will load. Works on the C64, SX64 and 128 in 64 or 128 mode. **Only £24.95.**

▶ 1571 FIX ROM

Are you experiencing any of these problems with your 1571 disk drive, Errors when using Superbase? Device Not Present Errors? Major problems when 2 or more open files? Takes forever to recognize a floppy disk? If you have one or more of these problems then you need 1571 FIX ROM, developed by Commodore Inc USA, just plugs in, solves over 19 main problems. **Only £24.95.**

▶ Commodore 1581 Disk Drive

The New Commodore 1581 drive is now available for the C128 or C64. This drive offers one megabyte of memory, THREE THOUSAND ONE HUNDRED AND SIXTY blocks free, (800K formatted capacity), and a very fast EIGHT THOUSAND Characters per second loading rate. Software for this new drive includes, VizaWrite Classic, HackPack, Petspeed, Oxford Pascal, CAD PAK, Chart Pack, Fontmaster, Spellmaster and much more. Using a package called Super 81 Utilities most software can simply be copied across to the new format. The drive is available for **£184.95.**

▶ Warp Speed

An incredible accelerator cartridge for the Commodore 128 and 64. Warpspeed has a switch that allows you to select 128 or 64 mode. The features of this cartridge apply to 1541, 1570, 1571 and 1581 disk drives in 64 or 128 mode. These features include loading, saving, formatting and verifying 10 times faster, extended DOS commands, print screen, disk and file copy, built in machine monitor, built in track and sector editor and much more. **Only £34.95.**

▶ The Big Blue Reader

New from SOGWAP Software Inc., The Big Blue Reader is ideal for those who use IBM PC compatible computers at work and have the Commodore 128 or 64 at home. The Big Blue Reader is not an MS-DOS emulator, but rather a unique and easy way to transfer word processing, text and ASCII files between two totally different formats, Commodore and MS-DOS. The Big Blue Reader requires a 1571 on both the Commodore 128 and 64 and will not work with a 1541 or similar drive. **Only £34.95.**

▶ The Drive Box

The drive box allows you to easily change the device number (8, 9, 10, or 11) of your 1541, 1571, 1570 or 128D computer. It will, as a bonus, allow you to bypass the write protect sensor, allowing you to write to the back side of the disk without cutting a notch. Installation requires a little soldering. **Only £19.95.**

▶ The Programmers Notebook

The Programmers Notebook is a high speed data storage and retrieval system designed specially for the programmer. With Programmers Notebook you can develop a special programming information database tailored to your own needs. It will provide a means of indexing your short routines and other programming information. Each entry has a brief description, date and type of routine. Once entered you can conduct tailored searches on the entire database, in fractions of seconds, looking for any information you select. It will sort, compile, display and provide printed copies in almost any format you desire. **Only £24.95.**

▶ Home Designer 128

Forget the name this is not a kitchen planner, it is probably the most advanced CAD system for the C128 computer. Home Designer allows you to create extremely detailed and accurate drawings at virtually any scale, with any resolution approaching a plotter. It offers accurate scaling, a powerful command set and up to five drawing layers. Why is Home Designer better than the rest? It is the only CAD system which allows layers of diagrams to be drawn and then laid upon each other in any order. Home Designer has an advanced zooming feature, allowing you to actually increase the drawing resolution, unlike other programs which simply display fat dots on the screen. Most dot matrix printers and plotters are supported and Home Designer works with a Commodore 1351 mouse. **Only £34.95.**

▶ Super Pack 2

Super Pack 2 is the combination of three packages, Pocket Writer, Filer and Planner. The integrated word processor, spreadsheet and database work on the Commodore 64 or 128 in 40 or 80 columns. Each package has all the features you would expect, plus a few you would not. The word processor displays on screen bold, underline, italics, sub and super script fonts as you type. The spreadsheet includes a sideways printing feature as well as 16 digit accuracy, plus a graphics module to produce bar, line and pie charts quickly and easily from your data. The database includes a report writer to create your own professional reports. Full details available on request. Super Pack 2 by Digital Solutions Inc is available for only **£64.95** or **£39.95** each.

▶ Super Disk Librarian

Super Disk Librarian will catalogue up to 1,000 disks and 15,200 programs. Do you have a lot of disks full of programs? Have you ever lost a program which you knew you had somewhere? Then Super Disk Librarian will provide you with a simple means of sorting and indexing the file names. Once the disks have been catalogued, numerous reports and lists can be printed and the library sorted and searched. Super Disk Librarian for the Commodore 128. **Only £29.95.**

▶ The CP/M Kit & Users Guide

The CP/M Kit introduces and explains the unknown, third mode of the C128. The CP/M Users Guide is a 300 page book by Abacus Software covering all aspects of CP/M. Subjects which include the system disk, resident commands and disk copying are described in detail. The CP/M kit contains over 20 CP/M programs including a word processor, chess game and a disk cataloguing program accompanied by a detailed guide to running programs in CP/M. The CP/M kit and Users Guide. **Only £34.95.**

▶ Super Disk Utilities

The ultimate utilities disk for the 1571 disk drive and C128 computer. Copy whole disks with 1 or 2 drives, change disk format, perform CBM DOS, CP/M and MS-DOS utility functions, scratch, unscratch, lock and unlock files, write protect disk, contains disk editor, drive monitor, unique RAM writer and more. **Only £24.95.**

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Accolade's sports sims

Accolade has announced the release of its pre-Xmas titles, which includes four new sports simulations, **Fast Break**, a basketball simulation, **Serve and Volley**, a tennis simulation, **Rack 'em**, a snooker simulation and **TKO (Technical Knock Out)**, a boxing simulation.

Serve and Volley is an action/strategy tennis simulation that emphasizes correct ball placement, timing and stroke selection. The game features three different levels of difficulty including fast, medium and hard; practice modes; three different court surfaces; and a full tennis court view with action windows and "strobe-o-strobe" graphics. Players can choose from three serves, including top spin, first serve and slice and five different hits, including volley forehand, smash, lob and backhand.

Serve and Volley is a one or two player game and offers match or tournament play vs. the computer or two players against each other.

Rack 'em, features a top down and 3-D view of the table contains five games including snooker, bumper pool, straight pool, 8 ball and 9 ball rules. A one or two player game, Rack 'em allows the player to pick the following variables that affect game play: the object ball and pocket, aim, english and power. The player can practice by using the restore shot feature that allows the last shot to be retaken. Additionally the game features trick shots and the option to save the 10 best shots.

Rack 'em also includes a generic game, which allows players to establish their own rules, move balls and change scores. In addition to the generic game feature, Rack 'em contains a bumper pool construction set that allows players to create their own bumper table.

Fast Break, designed by Steve Cartwright is the first full court three-on-three action basketball game that allows players to select from pre-set offensive and defensive plays or design their own. One to two players can compete head-to-head with professional rules and a full complement of basketball moves from three pointers to slam dunks. All these games will be priced at £9.95 (C) and £14.95 (D).

TKO (Technical Knock Out) is an arcade style, split-screen boxing game featuring large graphics. When playing TKO the first person perspective allows the player to get the feeling of what it is really like to be in the boxing ring. Featuring both offensive and defensive maneouvres for each contender, boxers dodge and duck as the opponent throws punches. When hit, each boxer's face shows the damage he has sustained, including black eyes, fat lips, swollen cheeks, bruised forehead and a cut jaw. TKO is a one or two player game designed by Mike Lorenzen.

Dysan free Desk Organiser

A personal desk organiser, which contains over a dozen useful items such as stapler and scissors, is offered free with every five boxes of any type of Dysan diskettes, or with every ten Dysan data cartridges ordered from Action Computer Supplies.

Action has also reduced the prices of all types of Dysan 5.25" and 3.5" diskettes. Typical reductions include 5.25", DS/HD diskettes for the IBM PC.AT, which are down from £17.30 to £14.63 per box one-off, or £11.62 when included in any order over £100.00, and 3.5", double-sided 1.0MB diskettes, which are reduced from £21.40 to £19.23 per box one-off, or £15.27 for £100+ orders.

The organiser includes scissors, knife, eraser, highlighter, stapler and remover, pencil and sharpener, pen, adhesive tape, notepad and tape measure, and has a compartment containing paper clips and rubber bands. All are housed in a zip-up carrying case measuring 215 × 150 × 30mm.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx HA0 1WL. Tel: 0800 333 333.

Modem Wars

Dan Bunten's Modem Wars is from Bunten's Ozark Softscope who also created M.UL.E, Seven Cities of Gold and Robot Rascals. Modem Wars is the first game designed specifically for modems and the first game to allow C64 owners to play against IBM and Apple II owners. It can also play between modems with different transmission speeds. A single player option allows non-modem owners to play against the computer. Modem Wars, E.A. tell us it is fast-paced strategy/action game in which players can randomly generate millions of different battlefields full of hills, trees, rivers and plains. There are five increasingly complex play modes. All games are timed and wins are determined by knockouts or points if time has expired.

From the ComCen (Command Centre) players control artillery, cavalry, infantry and spy units as they seek to defeat a remote opponent in a 2-player game, or take on the computer in a solo game.

Modem Wars offers on-line player support. Compuserve and Quantum U.S. networks will provide player support as an installed network feature. Players can enter the Modem Wars' player database, find other players on the database, share tips and strategies and even download a file on how to run a Modem Wars tournament.

Price C64 £14.95 disk

Who's That Girl?

In which our hero arrives in the nick of time. Super Dragon Slayer is an arcade adventure Codemasters tells us of "enormous proportions". For the Commodore 64 at £4.99.

"Does the prince have enough magic to slay the Dragon? Is he playing the standard or expert version? How many scrolls is he carrying? What happens next? Who knows? Who cares?"

JOHN RICHARDSON

MEDIAGENIC Plus SEGA

MEDIAGENIC International (formerly Activision), has announced the signing on an exclusive, five-title licensing deal with arcade giants SEGA. The agreement gives MEDIAGENIC the conversion rights to five of SEGA's top new games: *Galaxy Force, Altered Beast, Hot Rod, Sonic Boom, and Ace Attacker.* MEDIAGENIC will divide the titles between its two in-house labels, Activision and Electric Dreams, with releases scheduled for next year.

Galaxy Force, the latest in Sega's state-of-the-art dedicated simulators that will have you gasping in amazement just at its sheer size. Currently the No. 1 arcade game in America and Japan, Galaxy Force is simply an awesome experience! Race at breakneck speed through a choice of five space-scapes, with hazardous meteorite storms, seas of molten lava and raging fields of fire. AfterBurner-like in speed and addiction, Galaxy Force's bewildering action and stunning graphics just keeps you going back for more!

Altered Beast — another mean sucker that has been competing with *Galaxy Force* for the No. 1 spot across the Atlantic. Features simultaneous play capability, which has players teaming up to kick, punch and jump over a bizarre assortment of meanies. Each player's character "matures" or alters as he increases his score, turning from a normal human into a super-beast, whilst pursuing the enemy through graveyards, dark marshes, jungles, caves and enchanged palaces.

Hot Rod — destined to become one of the great Sega driving games, Hot Rod offers much more than just controlling your car. Featuring 30 driving scenarios, players aim to increase "fuel" and "money" supplies in order to win points. Fuel keeps you going, money lets you buy special car parts in extra bonus screens, providing an interesting strategy slant to the game.

Sonic Boom — puts you in the cockpit of a deadly fighter jet, set on a mission of destruction. Take out waves of enemy planes, ground based machine guns and tanks. Blow up munition trains for extra bonus points, not forgetting to collect companions fighers as you go. Complete the level by tackling the enormous aircraft carrier at the end.

Ace Attacker — a new release in the highly-rated and well-established popular SEGA Sports Simulation Game Series, reproducing the thrills of volleyball in an ultra-realistic game. Simple controls allow the player to direct the game freely, not just moving single team-members, but carrying out maneouvres ranging from opens, quicks, pack-attacks, feints, and foreceful rallies using a wide variety of tactics.

MEDIAGENIC's European Vice-President, Rod Cousens comments, "We are delighted to continue our excellent relationship with Sega with the signing of this new license agreement. Our line-up for next year is now looking exceptionally strong, and with further details still yet to be announced, 1989 will be a blockbusting year for MEDIAGENIC."

On-Line Yuppy Tech

A brand new section devoted to technology-hungry Yuppies is the latest addition to the range of on-line services published by Telemap Group.

Using a computer and modem to dial up British Telecom's Prestel Dialcom computer network, users can now access Xtra Voltage – a weekly mix of news, reviews and features on CDs, Hi-Fi, video, cellular telephones and other electronic gadgets in demand by today's Yuppie.

However, Xtra Voltage is aimed at anyone interested in technology and gadgets – it's not necessary to access the service in a BMW with a portable computer and cellular telephone!

Users with access to Prestel or Micronet should type out *Xtra# on their computers to read Xtra Voltage.

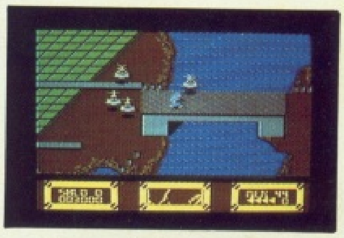
For further information/screenshots, please contact: Telemap Group 01-278 3143.

Novagen's Battle Island

C64 fans are going to be interested to hear that Paul Woakes, the inventor of Novaload and author of C64 hits Encounter! and Mercenary, has not abandoned the format.

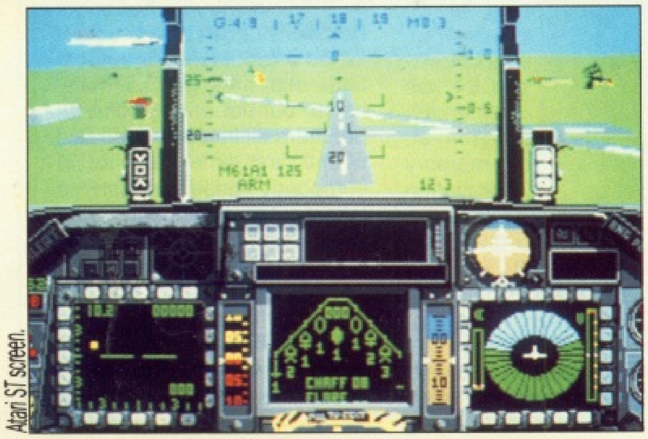
'The master of memory manipulation' as Novagen calls him, has developed a routine, specific to C64, that allows over 350 detailed screens to be accessible with fine multi-directional scrolling.

Novagen programmer, Gary Walton, has spent over a year coding this graphics extravaganza. The result, incident-packed arcade action over the massive play area of Battle Island.



Novagen's Bruce Jordan said, 'We're very excited about Battle Island. Paul has established a reputation for innovation, and he's got so many ideas, but not enough time to put them all into practice. This is the first time he's found somebody good enough to take on one of his ideas. And its the first time there's been a Novagen release written by anyone other than Paul. It won't be the last! Battle Island will be a C64 hit, and you'll hear much more of Gary Walton.'

FOR THE FIRST TIMH



Atari ST screen.

It is daybreak. You join the other pilots in the squadron crewroom to discuss objectives for the day ahead. Tactics, combat manoeuvres; all are captured completely by F-16 COMBAT PILOT. During your pre-flight briefing you instruct the ground crew on weapon loading and plan your attack…

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Jedi completes Domark trilogy

Following Star Wars and more recently The Empire Strikes Back, Domark has confirmed the Autumn launch of Return of the Jedi.

The game picks up the action of the movie where the rebel forces begin their dangerous attack against the Imperial Deathstar.

In the first game of battle you control Princess Leia on her speederbike through the forest of Endor. She is pursued tirelessly by the Imperial Stormtroopers also on speederbikes. As you make your way to the Ewoks village, they help your progress by springing traps — but make sure you do not get destroyed by mistake.

Once you've left Leia safely at the Enok Village go to another part of the forest to control Chewbacca's Scount Walker as he maneouvers it to a bunker. There Han Solo is waiting to deactivate the shields protecting the Death Star.

Control Chewbacca as he avoids logs, and blasts his way through wave after wave of logs and rocks.

Return of the Jedi will be available on the Amiga and C64.

Domark's Spitting Image (second time around)

Domark is bubbling with delight. It has secured the rights to Spitting Image.

Hailed as one of the most successful and original television programmes in recent years, Spitting Image has received massive audience attention from all over the world for its ridiculing satire, which makes no-holds-barred fun of celebrities, politicians and The Royal Family.

Domark's Spitting Image will be no-holds-barred fun and enjoyment. Your task is simply to save the world.

"We wanted to make the game as much fun as the show itself," sayd Domark Joint Managing Director Dominic Wheatley. "Design Design are programming Spitting Image for Domark and are working very closely not only with ourselves and our technical people, but also and very importantly with Spitting Image's own script writers."

You are presented with six challengers who want to take-over the world. These are The Pope, The Ayatollah, Gorbachev, Thatcher, Botha and Ronald MacDonald (better known as the current President of the United States). A great war is due to take place in seven years, it is your task to ensure that the leader who emerges from this war is stopped.

Its madcap combat with each of the nasty leaders to ensure you destroy their credibility, thus they are unable to attain their goal. Watch out for The Pope's unfair use of a fire extinguisher (of course, you would expect that wouldn't you?), Thatcher's gob in the face, and Botha's interesting toilet habits against the opposition.

A series of hilarious fights in different parts of the world see you work your way through some of the most important leaders in the world today. Oh, and watch out for some of the backdrops, with the Cabinet gambling, a Cardinal at the Vatican stealing money from a peasant, and the queues at the Kremlin (so what's new?).

A huge piece of programming full of V-Signs, bums, and odd naughty word, Moscow Disco Dancing Championships, and six people's bid to rule the world. Only your ability to do away with the credibility of each through combat can stop them.

Interestingly, this is not the first "Spitting Image" style product Domark have released. They brought out "Split Personalities" some time ago which was an attempt to cash in on the popularity of the TV Show whose right they now have bought at cost.

Are you in a Tracer Mood?

MicroIllusions has announced the release of Tracers, a high speed game of cat and mouse in the futuristic world of computer/human synthesis. (Whatever that may mean!)

Just as it stands, Tracers is a superior arcade game. But MicroIllusions claim to have taken it one step further by 'building the context, setting the tone, and priming the player for a journey into the white knuckle world of the future.' So, say M.I., Tracers, is more than just a game. It's a mood, a mindset, an experience. (Wow!).

Imagine that you are on Tracer Duty. All you have to do is enter the network with your mind and hunt down the techno-punks that are out to ruin the system. (Is that all?)

Lay your traps at each node, look out for restricted areas, and whatever you do, don't get burned. Remember, there's no stopping! You can only go faster!

Tracers is a game of confine and conquer for one or two players. The object is to guide an ever growing "snake" around a grid in such a manner that your opponents are forced to crash. The game's 19 skill levels, 17 speeds, 15 musical selections, and 5 player options, will MicroIllusion claim make Tracers an addictive experience that you never tire of.'

Tracers will be available on the Amiga and possibly later on the 64.

3+ million Personal Computer LANs by 1993

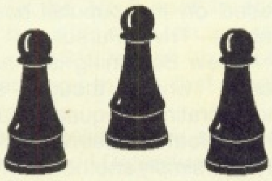
More than 3 million personal computers are expected to be connected to local area networks by 1993, a new study, "Personal Computer Local Area Network Markets", published by Market Intelligence Research Company, Mountain View, CA, reveals. This strong increase will be due to the maturation of existing pilot programs using LANs. By 1993, the report forecasts, more than $1 billion will be spent on personal computer local area network components, and transmission/media cabling revenues will more than quadruple from their estimated 1988 level of $104.8 million.

And, as the computer industry as a whole moves toward distributed processing, more local area networks will follow this trend, leading to diminished use of network servers. These distributed systems will be lower in price than centralized systems and so will drive the market, the report finds.

Major technology trends within the personal computer local area network market highlighted in the report include: the development of multi-vendor connectivity products, more added features, easier installation, and the increased presence of microprocessors on network interface boards. Continuing clarification of standards will allow end-users to construct their own "personalized" local area networks, choosing the best cabling and access methods, as well as operating system for their particular applications. Standards will also make the selection of PC LAN software an easier and more reliable process.

Contact: MIRC Europe, 55 rue Vandenhoven, 1200 Brussels, Belgium. Tel: +32 (2) 762 2781. Fax: +32 (2) 771 7248.

CDS's latest Chess program for 16 bit computers



CDS Software on stand 3019 is launching Colossus Chess X for the Commodore Amiga and IBM PC. This latest Colossus version has been fully revised in both play and graphics and is claimed to improve on the set by their best-selling Colossus Chess 4 for 8 bit computers.

You can view the board in two or three dimensions, use four different chess sets and move the angle of view at will. With a large opening book of moves and an infinite number of levels, all players should find it a worthy opponent.

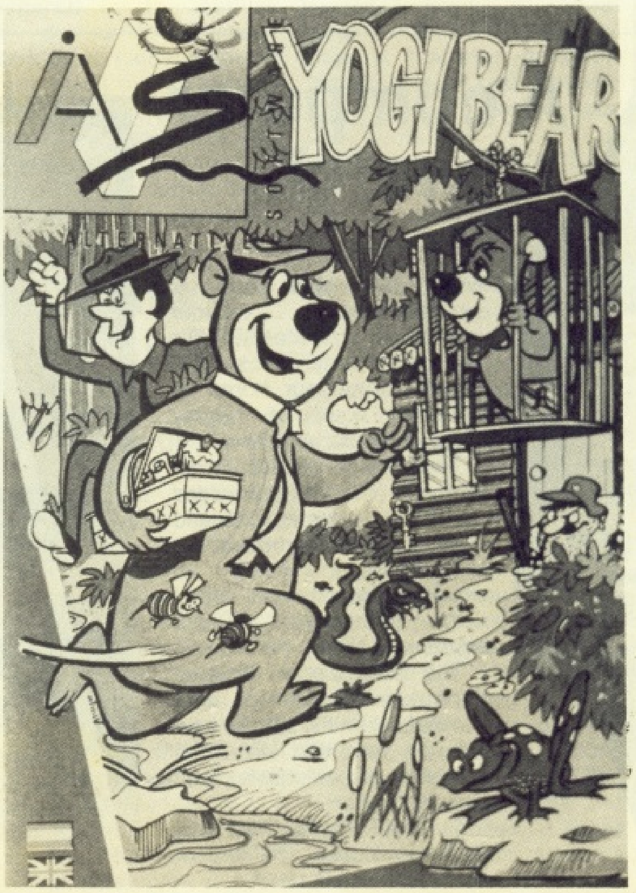
Blue Ribbon, the budget publishing company in the same group, claims their Steve Davis Snooker is the best selling budget game of 1988 to date.

Among original titles, lined up for autumn release, will be Wulfpack — a submarine warfare games, Hi-Q Quiz — an trivia quiz for the whole family and Syntax — a scrolling arcade game — a shoot-em-up.

Fortran for C-64

Abacus, the largest producer of language software for Commodore computers has, announced the latest addition to its lineup – Fortran 64. Thirty years ago, Fortran was the first high level language. Today it still remains one of the most universally used programming languages. Fortran 64 supports more than 45 statements and functions and is a practical, economical and convenient way for users to learn Fortran on the popular Commodore 64. It is aimed at the student and novice programmer who wants to use this mathematically based language.

Fortran 64 includes a built-in editor, compiler, and linker and creates a fast standalone program. Once completed, the program module may be run without Fortran. Subroutines and functions may be compiled separately from the main program. Input and output may be free form or formatted. And the user has access to the 6502 registers, Kernal and machine language routines. Fortran 64 will be available mid-October. Suggested retail (U.S. $39.95. Contact: 5370 52nd Street SE, Grand Rapids, MI 49508. Phone 616/698-0330.



Alternative Software Moves On

With just a few weeks to go it now seems certain that Alternative Software, who were only formed in December '86, will be one of the UK's most successful budget software house this year.

Since the beginning of June, Alternative topped Gallup's market share charts almost every week. They have been the No. 1 software house in 7 out of the last 8 Gallup charts and since the beginning of June, their average market share has been 11.2%. The only other company to have an average market share for this period in double figures has been Mastertronic with 10.5%.

Endzone follows a similar type of format to Soccer Boss, which is a football management game and has so far proved to be Alternative's second best-selling game this summer. The company's most successful game in the summer was the re-release of the Piranha game, Yogi Bear.

Zork Zero: A New Beginning

IN THE beginning, there was Zork, history's best-selling entertainment software product which sold nearly one million copies. But wait! Was ZORK really the beginning? This is a question that has been weighing heavily on the minds of all ZORK fans since the Year 1 GUE.

Well, ZORK fans, your wait is over. Infocom has finally spilled the magic Frobozz beans. Steve Meretzky, the author of the famed LEATER GODDESSES OF PHOBOS, has finally brought you back to before the beginning. ZORK ZERO, the ZORK TRILOGY, tells all (well, almost all) in truly uproarious Meretzkian style, but with several new twists.

Epic in both size and scope, this prequel covers a century of time and explores the collapse of the great Underground Empire. Straining our new development system to the limit, ZORK ZERO is Infocom's largest game ever, with more than 200 locations, and as many puzzles as all three games of the ZORK TRILOGY combined! To top it off, while ZORK ZERO has everything you've come to expect from Infocom, it also features the first graphical puzzles to appear in an Infocom title!

Subtitled *"The Revenge of Megaboz"*, ZORK ZERO takes you back to the last days of the empire. Megaboz, an evil wizard, has cast a spell that has destroyed the ruling Flathead family, and has threatened the kingdom itself. Although you are but one of the many fortune hunters who have flooded the capital city of Flatheadia to try to claim the huge reward for stemming the curse, a carefully guarded family secret gives you a big advantage!

ZORK ZERO will be available for the Amiga early in 1989, and for the Commodore 128 in the spring of 1989.

New beginning for T. Pursuit

After two years and sales in excess of 400,000 units worldwide, Domark has announced the UK and European launch of a new entertainment package based on the popular board game — Trivial Pursuit.

A New Beginning is a new game, which though still incorporating the question and answer format, does not merely present simply another batch of questions.

Instead a game called A New Beginning has been assembled, which will take you through many Galaxies in a bid to reach the planet of Genus II.

You and your family have to travel through space to a far off star system. Centuries of pollution have left the World a victim of the "greenhouse effect", so you set off in your laser driven rockets to the far off constellation which contains the planet Genus II. However, it has been agreed that only those with a superior knowledge of Genus Trivia will be allowed onto Genus II.

Each player first has to prove his worth for the trip in the sophisticated laser rockets. Admission is granted by answering a trivial question correctly. Each player then assumes the role of a character, or live token, within the game.

Then Blast Off! Venturing through space you will encounter many stars and planets. You have to land at six and collect six luxury household items before making your way finally to Genus II and the final test of your Genus Trivia knowledge. Though each planet with an item you need is in a different galaxy, each galaxy has some 50 planets. There is no way of telling which planet is which, though there are sometimes clues in planetary names to help you discern between the six different categories of Entertainment, History, Science, Geography, Art and Literature and Sports and Leisure.

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PC Antibody

CAPITOL Computer Products is to launch a PC virus detection program, called Anitbody. It runs inside the operating system, and claims to detect any software missiles which have attached themselves there, poised to cause destruction to valuable data.

Antibody is best installed when a machine is first used, as it records a 'map' of a clean operating system. Users place it in the Auto-exec.bat file which it is claimed is not a difficult procedure.

When the machine is started, Antibody compares the operating system files with its map of the clean progam, and if it finds anything unusual it offers to restart the system with its clean version.

Antibody cannot detect a virus which enters during a session and causes immediate damage; itonly locates those which are programmed to lurk in the operating system until uch time as they are triggered to act.

It is also ineffective against viruses which are already impregnated, as the map image of the operating system it uses as a yardstick includes the virus program.

Nevertheless, for those who use bulletin boards, public databses, electronic mail, or buy cheap programs or even swop disks with friends or colleagues, a virus detector makes for greater peace of mind and safe computing.

Antibody costs £50 and is available from Capital Computer Products in Farlington on (0705) 210012.

Mediagenic to die hard

MEDIAGENIC (formerly Activision), has acquired the license to "DIE HARD", the latest Bruce Willis action-adventure movie from Twentieth Century Fox. "DIE HARD", premiered in America recently, currently holds the No.3 spot in the US box office top ten, grossing over $10 million on initial screenings in the first week of release.

Bruce Willis stars as New York City Detective John McClane, who is the only hope for a small group of hostages, (including McCane's wife Holly), trapped in a Los Angeles office building when it is seized by terrorists on Christmas Eve. "DIE HARD" sees a departure from Willis' "Moonlighting" persona of David Addison, as he plays a no-nonsense cop who is taking on twelve terrorists with grit and determination, but not without a sense of humour. "DIE HARD" the computer game, will be available across a minimum of five formats, and is scheduled for release next year.

The Demon Soul of Microillusions

MICROILLUSIONS invites all adventurous Amiga users to enter into the steamy jungles of Peru and into the *Shrine of the Demon Soul,* due for release this Autumn. It is whispered by the natives that somewhere within these jungles, hidden beneath an unnatural overgrowth of amber tendrils, is a stone ziggurat. Built centuries ago by the hands of a vanished race, it houses what they call *La alma del demonio,* the Demon Soul. Held captive at the bottom of a deep complex it sleeps, filling the corridors with its nightmares. But along with the terror there is hope, the hope of four adventurers who shall follow their dreams into darkness. Legend beings with the first step into the *Shrine of the Demon Soul.* It features smoothly scrolling screens; dozens of monsters, treasures, and spells; over a hundred dungeon levels; one or two players; editor lets you design your own dungeons.

Shrine of the Demon Soul will be available for the Amiga in October.

PAC Fever breaks out

FOLLOWING Grandslam's great triumph with PAC-LAND, that favourite computer character is back and raring for action in PAC-MANIA.

If you thought Pac was energetic in PAC-LAND you should see his newly found bounce power in what Grandslam describe as "this manic fun packed game". With new aerial manoeuvers Pac faces fresh challenges in a world of 3-D mazes. He bounces through Block Town, Pac Man's Park, Sandbox Land and Jungly Steps. Not only does he have to watch out for those pesky ghosts Blinky, Pinky, Inky and Clyde, but also their two new recruits Sue and Jumpy. Pac-Man must make best use of his speed and cunning to outwit these annoying creeps. With those out of his way he can get on with the task in hand — that of eating the all important pills. And he mustn't forget to gobble the green and red power pills which will give him extra speed and points.

With a 1 or 2 player option, PAC-MANIA will be bouncing its way to your screens in the Autumn on the 64 £9.95 and £14.95, and Amiga — £19.95.

Hunt the Holy Grail

A NATIONWIDE quest is starting to find the secret hiding place of a £5,000 replica of the legendary Holy Grail. The 'treasure hunt' has been devised by Level 9 and Mandarin Software to coincide with the launch of Lancelot, a blockbuster illustrated adventure game based on the legend of King Arthur.

Hand crafted from solid sterling silver, the 7in tall copy of the famous Arthurian goblet is already hidden at a secret location somewhere in the UK. The Grail, which is gilded inside with 22 carat gold and encrusted with amethysts, garnets and opals, will stand on an oak block with a solid silver plaque to be engraved with the winner's name.

In the competition — created by Level 9's Pete Austin — combatants entering the lists will have to battle through a two-stage contest based on clues contained in the three-adventure Lancelot package.

Four preliminary clues issued on a special Grail telephone hotline as from October 3 will reveal possible — but not actual — locations for the hidden treasure. The first 36 contestants to correctly guess these locations will then receive a second set of clues ultimately leading to the Grail's true burial place.

Pete Austin says that the first stage in the Holy Grail quest is simple enough to be cracked by those with even the most basic knowledge of the legend. "All contestants need to do is study the Lancelot game carefully and the clues — and their answers — will become obvious," he said.

Lancelot faithfully traces the legend from the founding of the Round Table through to the successful conclusion of the hunt for the Holy Grail itself. More details on Lancelot and the Holy Grail competition are available from the Amiga Mandarin Software on 0625 878888.

Balance Of Power: The 1990 Edition

Mindscape tell us there are six reasons why you'll want to play Balance of Power: The 1990 Edition: Afghanistan, Iran, Iraq, Israel, Jordan and Nicaragua.

The world's political landscape has changed since the 1985 release of Chris Crawford's original Balance of Power, the personal computer game that former Deputy Assistant to the President for National Security Affairs, David Aaron, called "the most sophisticated strategic simulation in America other than Pentagon war games." Its no wonder, then, that thousands of Balance of Power players suggested Crawford write a new edition of the game. Include more countries. Make it multipolar. Update the database. Crawford listened to these critics-at-large, and the result brings new challenges to current events aficionados who think that they could run a superpower — if only they were given the chance.

In Balance of Power: The 1990 Edition, players assume the role of either the President of the United States or the General Secretary of the Soviet Union. The players' twofold goal is to complete eight years in office (1989-1997) without initiating a nuclear conflict and to accumulate more prestige points than the opposing superpower. In order to win world prestige, diplomatic tools, including military aid and treaties, are available to influence friendly and unfriendly nations.

Balance of Power: The 1990 Edition features a new multipolar level, bringing added realism to the program. In a multipolar game the minor (non-superpower) countries of the world pursue active foreign policies. You must track world activity and prevent your short-sighted allies from following their own agenda. While there is no possibility of nuclear confrontation with minor countries, their actions indirectly affect every move you make, and can lead to *superpower* confrontation and potential nuclear war. Balance of Power will be for IBM compatibles and the Amiga.

ProWrite 2.0

Bytes & Pieces have linked up with an American Software House, New Horizons to bring out in Europe ProWrite 2.0 the colour graphics word processor for the Amiga. This Word Processor has a full spell checker, reads IFF and HAM pictures (resize as well) WYSIWYG in Interlace or Med res on the monitor. Bytes & Pieces will be selling ProWrite 2.0 at £85 with a trade-in option for your old word processor. ProScript for postscript printers will soon be released as will other ProWrite packages. Contact Bytes & Pieces at 37 Cecil Street, Lytham, Lancs, FY8 5NN.

Compumart's free disks

Leading consumables supplier, Compumart is offering two free 3.5" disks with its disk storage boxes from its range of storage systems for all sizes of floppy disks.

No more misfiled or damaged disks, the range of disk boxes — for 3", 3.5" and 5.25" disks — are made from high quality, anti-static impact resistant plastic and are each designed for maximum storage efficiency. In addition, all are lockable for added security. The 3.5" storage box holds up to 70 disks and is available with two free blank 3.5" disks.

All are supplied with free dividers and prices include first class delivery with same day despatch.

Priced at £11.26 (excluding VAT) for the 3.5" boxes and £9.49 or £11.00 for the 5.25" models, these storage systems seem an ideal way to file and protect computer disks.

Contact: Compumart Ltd., Jubilee Drive, Loughborough, Leics LE11 0XS. Tel: 0509 610444.

Wheel of Fortune spins for Ocean

There was no shortage of volunteers at Ocean Software when Scottish Television asked if somebody could show Angela Ekaette, hostess of their new game show "Wheel of Fortune", how to play the arcade game "Typhoon".

Ocean's young technician, 18-year-old Kane Valentine, landed the job of teaching Angela how to operate the joystick during the game's simulated F14 helicopter flight. Said Kane: "She learned very quickly, even though she had never played an arcade game before."

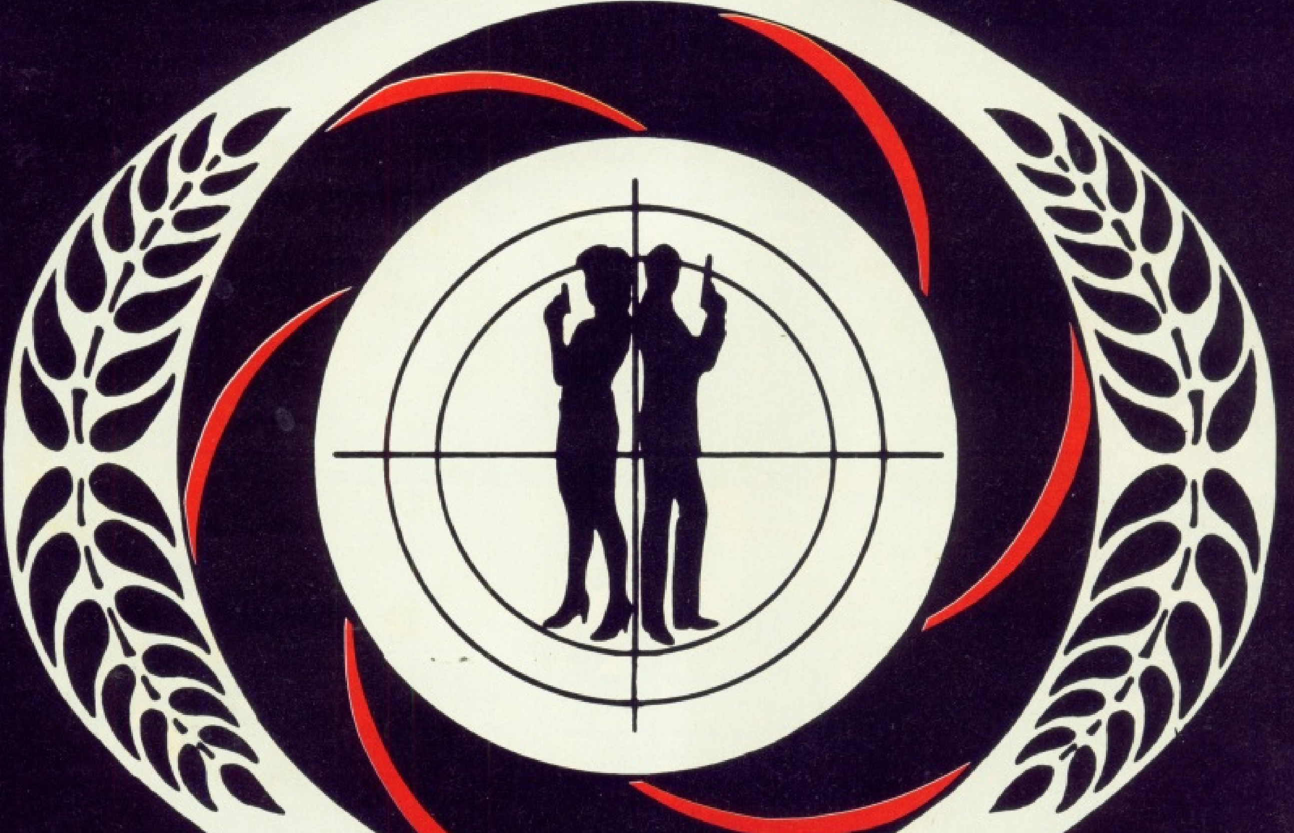
Angela is being hailed as the UK's answer to Vanna White — the female host on the American version of the world's biggest game show which attracts over 43 million viewers. In the US Vanna earns a million dollars from TV appearances, and has dined with the President and First Lady.

Scottish Television commissioned the Manchester-based software house to build an exclusive format of the coin-operated arcade game capable of fitting into a small suitcase. Worth over £1,000, it will be offered as a special prize on the ITV network game show.

Ocean is to release the Typhoon computer game program in the early Autumn for Commodore 64/128 (C) £8.95, (D) £14.95. Formats for PC compatible machines (£19.95) and Commodore Amiga (£24.95) will also be released.

Left to right: Ocean Software technician Kane Valentine with television "Wheel of Fortune" hostess Angela Ekaette, and host Nicky Campbell.

ESPIONAGE



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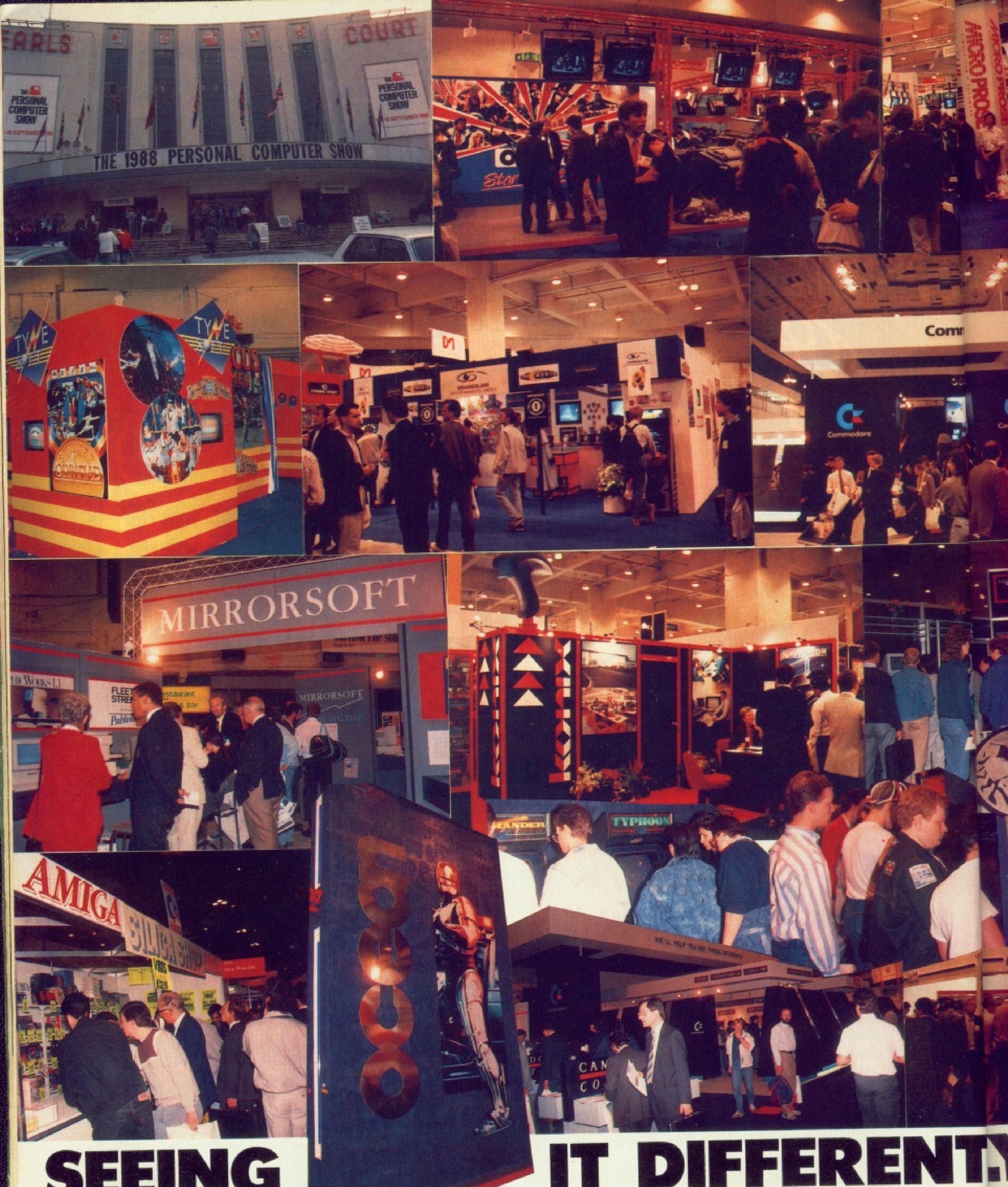
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1. Earls Court - The new PC Show venue.
2. Invading Ocean's Military scene
3. Microprose draws the crowds
4. Disc Company's Howard Mark talks Kind Words
5. Massive US Gold's stand, part 1
6. Tynesoft plus topical Olympiad
7. Growing Grandslam
8. Commodore - the largest stand of the show
9. Psionic Man
10. Domark takes to London Transport
11. Mirrorsoft makes its business image work
12. Konix' Holloway plus hanging navigator
13. Psygnosis draws them in
14. Spitting Image's Thatcher sorts them out
15. Mandarin goes for oriental Magik

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thousands of applications
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JEDI
MANDARIN SOFTWARE
ANCO
BOBBY YRD
THUD RIDGE

TY -THE PC SHOW

16. Shopping at Silica

17. Law and Order Ocean style

18. CBM helps you see differently

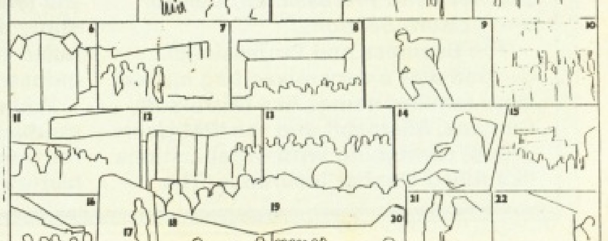
19. Real life arcade addiction

20. Anco, growing big

21. Steaks on the Afterburner and chips sliced with Thunderblades! Burger me, it's coin-op time!

22. Advertising slogans rule, OK?

Photography: Rob Mose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We'll Make You See Things Differently

Zack (Mule) Skinner invites a close friend to take a look at the PC Show which the organisers claimed to be the solution to all your problems...

THIS year's big Personal Computer Show was different. To begin with they changed the name. No longer the PCW Show, it had become just the Personal Computer Show. No doubt a more correct description, but one that seemed somehow to lack a title of the old character.

It was not only the name that had changed, so had the venue. The familiar two floors of Olympia in the silghtly raffish West Kensington had become just one in the more plebian Earls Court, Aussie bedsitter land, fully traffic-jammed.

The organisers claimed that the size had increased but there was a general impression of the stands being more tightly packed than in previous years and the lack of a second floor and upper vantage point undoubtedly removed some of the spectacular feeling that the huge banners and interestingly divided layout — large stands downstairs, small ones upstairs — that Olympia provided.

For some, the major games houses and Commodore in particular, with the largest single stand at the Show — the opportunity was taken to mount huge displays. And clearly video has come in as the fashionable way to present excitingly.

The Show was divided into three: *Business and Professional, Central and Leisure Sections.*

The Business and Professional Section was a very mixed bag indeed. With familiar names like Mirrorsoft, Cumana, Microsoft and the IBM Users group, combining with organisations like Allied Dunbar Insurance, The Netherlands Chamber of Commerce and the Bank of Scotland, that fitted oddly with a computer show.

The catalogue entries for this section were some of the most entertaining. The Mouse Company told us that it "specialises in supplying a wide variety of pointing device". Surely they do more than just point?

Lyi-Cheng Enterprises of Taipei told us quaintly that the founders Mr Kuo and Mrs Hus had started the company with $2000 and now had turned that into $2 million and that their company had received The Manufacturers and Traders with Good Record award. LP or CD?

CENTRAL HALL

This area had a nice mixture of hardware and software manufacturers, distributors and retailers. Commodore last year somewhat overshadowed by the Atari village carried its recent recovery to the stage of mounting a massive, prestigious stand that impressed all. It was a gesture, like the wingding CBM threw at the fashionable London nightclub, the Hippodrome, that conveyed its renewed confidence and the generally admitted sense that it has regained the leadership of the sector. Thw show of strength could not have failed to bring it the computer industry's important support.

While there were few very new products exhibited on the CBM stand for those who have followed the recent history of the Amiga, a much greater

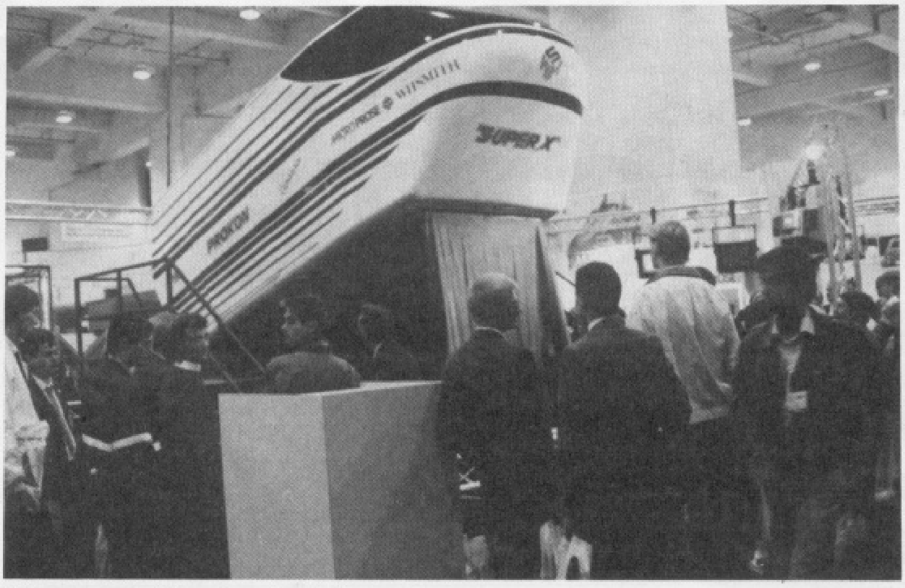
"And what is the PC Show for?" She asked. I was, I have to admit, taken aback and hard put for a moment to find an answer. I had brought this non-home computer user to the PC Show at Earl's Court so that I would get the opinion of an unbiased outsider to confirm or challenge my own somewhat jaded view of this the premier event in the non-business computer world. Well, that itself is not entirely a correct definition because there is at this Show a substantial number of business stands which seem though aimed at the small rather than the big corporate user. Certainly, I pointed out to my interested guest, the new Sinclair Professional IBM PC-compatible which was featured on the Amstrad Stand was very unlikely to be of great attraction to big companies. Is it made by Sir Clive Sinclair?" she asked.

"No, it isn't," I said. "He hasn't got anything to do with the company. His company is called Cambridge and is over there with a computer called Z88."

It was that point she began to look at me peculiarly and demanded "What is the PC Show for?"

Well, what is the PC Show for?

For the first two days, it certainly is not for the public. They are Trade Days when the distributors and the dealers in computer software get together with the manufacturers to work out deals that will carry them through the coming Christmas period when some 50% of the total entertainment computer business is done.



Microprose's 14 seater simulator

number of the public was brought into contact withteh exciting things that are happening to Commodore's lead machine.

Visitors from abroad like Aegis' stunning VP Michelle Mehtorian from California were pleasurably surprised how much stronger an impression Commodore UK makes than its U.S. equivalent.

There were also some interesting demos of Amiga software shown not always from conventional sources. Dee Nkagbu a student of the Department of 3D Design at the West Surrey College of Art and Design caused quite a sensation with designs she created at the Show using good old Deluxe paint in some new and attractive ways.

Also in the Central area were familiar names like Logotron — their Starray game is one of the most successful Amiga shoot 'em ups to emerge so far, Precision Software whose Superbase has become almost a living legend, Prism Leisure who are developing the exciting Kristal game, Mandarin Software who have the popular Time and Magik, specialist distributors HB Marketing and renowned retailers like Mikro-Anvika and Gultronics.

THE LEISURE AREA

Certainly the section that made the most immediate impact was the Leisure Hall. The show business aspect of the computer industry was brought out unmercifully there. All the main names, except Mediagenic Activision — who staged a minishow of their own at a fashionable West End hotel and Electronic Arts which had stretched limos to take you to the

Those days are also for impressing the industry. That means massive PR efforts are executed. The huge stands are opened and the publicity stunts are pulled. The small stands are filled with products and their hopeful owners dispense hospitality to their trade customers. And the Press are bid to a multiplicity of events — all seemingly timed to occur simultaneously — and enthusiastically informed of the outstanding qualities and unstoppable potential success of a myriad of competing products. Hardened journalists are known to have lost their mental balance, I inform my guest, under this brutal bombardment of total conviction even fanaticism and come away from a Press Conference believing that this or that product is really going to change the course of life as we know it.

The first two days are notable for little knots of men — the computer business, even she has already observed is predominently male, except for the obviously rented "personality girls" from whom the stands out was the tall model clad in leopard-skin rage and tatters on the Cheetah stand — little knots of low-talking suit-dressed males discussing with the concentration which betokens the subject of the conversation as money. They ignore the racket that goes on in the background, even if it means shouting in each others ears. This is business This is serious money they are going to make.

Perhaps, in spite of the professional character of the first two days, the most notable aspect is the noise. For though the visitors are there for the business they can do, the many massive stands are there also to impress the public at large and for them the Show Business element has been created. And noise is a basic part of it. Lots of noise. Deafening noise. Videos blaring, music keyboards playing, games crashing on arcade machines, the whole leisure area at times resembles a fairground — all it needs is a Ferris Wheel towering over it and we could be at 'Appy 'Ampstead 'Eath on a Bank Holiday Monday...

Ah, she says, at the end of my "First Two Trade Days" spiel, it's a Trade Fair.

"Well, not exactly," I offer. "For the other days, especially the Saturday and Sunday are for the public."

"Do they come to buy things?" she asks.

"They can't really buy the computers. They're mostly not for sale. Anyway Amstred doesn't have any of its new Sinclair yet."

"So why are they putting them in front of the public then?" she reasonably wants to know. I hurry on. I do not want to engage her in a futile discussion about why computer companies insist on making big announcements of products that are often months away and sometimes never finally appear at all. Vapourare is a sore subject for all of us.

"Some stands sell things," I tell her. "But they are mostly selling software at cutprices."

"Can people buy that software anywhere else?" she wants to know.

"Oh yes, in any good computer store — or by mail order."

"At the sae price?"

"More or less."

"Oh."

By this time we were wandering through the Leisure Area where most of the major entertainment software companies are to be found.

"Whose stand is this?"

"Microprose," I tell her.

"Do Microprose sell simulators?"

"Yes. But they can't buy this one."

"Why not?"

"Because it will take 14 people."

"And Microprose isn't selling it?"

"No. It doesn't belong to them."

"But I thought you said they sell simulators?"

"They do but not this kind."

She is beginning to look at me peculiarly again so I move her along to the Ocean Stand.

"Why have they got a tank?" she wants to know.

"It isn't a tank. It is an armoured personnel carrier," I tell her expertly.

"Well, what is it doing here? Do Ocean sell military vehicles?"

"No they are using it to publicise a game. Operation Wolf."

"What have wolves got to do with

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PIRATICAL THOUGHTS

Eight out of ten computer owners prefer a taste of piracy, asserts Peter Gerrard and remembers a program that waits six months before keelhauling you.

"Spanish Galleon on the Starboard Bow, Cap'n!" is probably what the non-computer world thinks about piracy. Attack someone weaker than yourself, take all their belongings from them, and sail happily about the seven seas until you can either rob another ship or end up running foul of the great white whale.

On the home computer front things are somewhat different. At a guess, there must be about eight out of ten home computer users who own a piece of commercial software that they didn't buy for themselves. I arrived at that figure after conducting a quick and discreet survey amongst the computer users that I know. And to make matters worse, I am one of those eight!

However, before you get the idea that I am a rampant criminal, there is just one commercially available piece of software that I regularly use and which was neither bought nor sent to me for review. It is a word processor, and I legitimately own a copy of the original version of that word processor. An update was sent to me via a computer magazine, for my own use when sending material to the magazine, so that I and they could take advantage of relatively cheap typesetting by taking my work directly from my disk and feeding it into the typesetting computer at the other end of the chain.

That is not to say that I have never played about with pirated software . . .

In 1981 I was working for Commodore Business Machines, and we were beginning to bring out an increasing number of software products on disk. We had long ago given up hope of trying to stop people copying material on cassette. You can make it harder for them, and probably stop ninety nine per cent of people duplicating your tape, but I am firmly convinced that you will never, ever, stop people copying a cassette tape if they really want to. We shall refer to cassette tapes later.

We wanted to protect a whole series of disk-based products, and someone came up with the idea of physically damaging the disk (five and a quarter inch floppies, familiar to most Commodore users) by placing a magnet next to it in a known place on the disk. Then, when anyone attempted to do a straightforward copy of the thing using the BACKUP command on Commodore's business machines, the command would fail because of an error on various sectors of a track.

> ***"As soon as I realised what was happening I just whisked their disk out of the dual drive and crumpled it up."***

This method did not last for very long, and things began getting a mite more sophisticated. One example was the games' disk known as Arcadia One, which contained six individual games all accessed from a main menu. Actually it contained seven, that seventh only becoming available after a high enough score had been achieved on the other six games. The trouble that we went to trying to hide that seventh game on the disk! Paul Higginbottom in particular put in some sterling work, and we managed to do it in the end.

After a high enough score had been achieved a kind of curtain drew back on the screen to reveal a suitably congratulatory message, and the disk was written to and told that it could now reveal the seventh game from the menu. In all my time at Commodore that was probably the best protected product that we ever released. But people still copied it, as they undoubtedly always will.

One thing we did manage to do, though, and this pointed the way to future ideas concerning software protection, was to make the accompanying manual look physically attractive. People could play the games without the manual, just as they could copy certain commercial software and use it with a photocopy of the manual supplied with that, but a lot of effort went into producing the "goodies" that came with Arcadia One. The manual was spiral bound, had a highly presentable cover, and looked very good inside. Yes, you could quite easily photocopy it, but it did not look as good as the original, and many people paid for that original artwork. Just as well, it cost a fortune, and made severe dents in the software budget for that year!

Round about the same time that we were producing this games package another company was selling a suite of programs for hoteliers, telling when rooms were vacant, making up guests' bills, and so on. It sold very well, and had a nicely mischievous air of protection about it. In order to encourage people to stock the product, many demonstration copies of it were sent out to various Commodore distributors. They were fully working copies, they could be used in a business, but dealers were told that these were demonstration only and were definitely not for re-sale. Some did sell them, of course, taking in the hundreds of pounds profit as they did so, but they didn't know what the splendid manager of the company knew. The programs could be copied, they would work perfectly well for six months (hotels had to input the date each day in order to function), and then the program would check something and realise that it was a copy. Six months' records would be over-written by the program, and the person using it would be prompted to contact the original supplier of the demonstration disks and would then be asked where they had bought it from. Several unscrupulous

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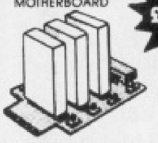

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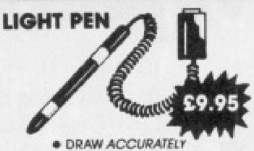

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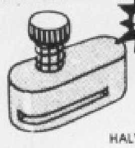

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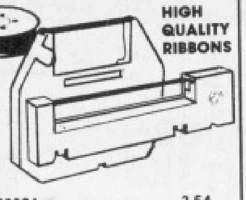

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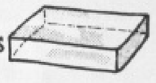

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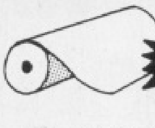

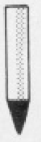

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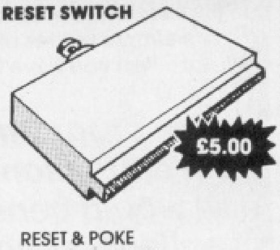

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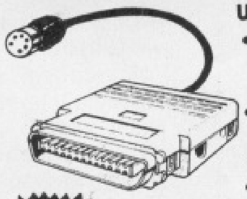

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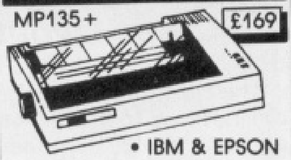

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The program allows you to design a logo (icon) or illustration that you can drop onto the card. There are some little clip-art graphics on disk ready to use or you may choose design and draw your own. Then you may choose the typestyles and type sizes from a good range, then position the type around the logo.

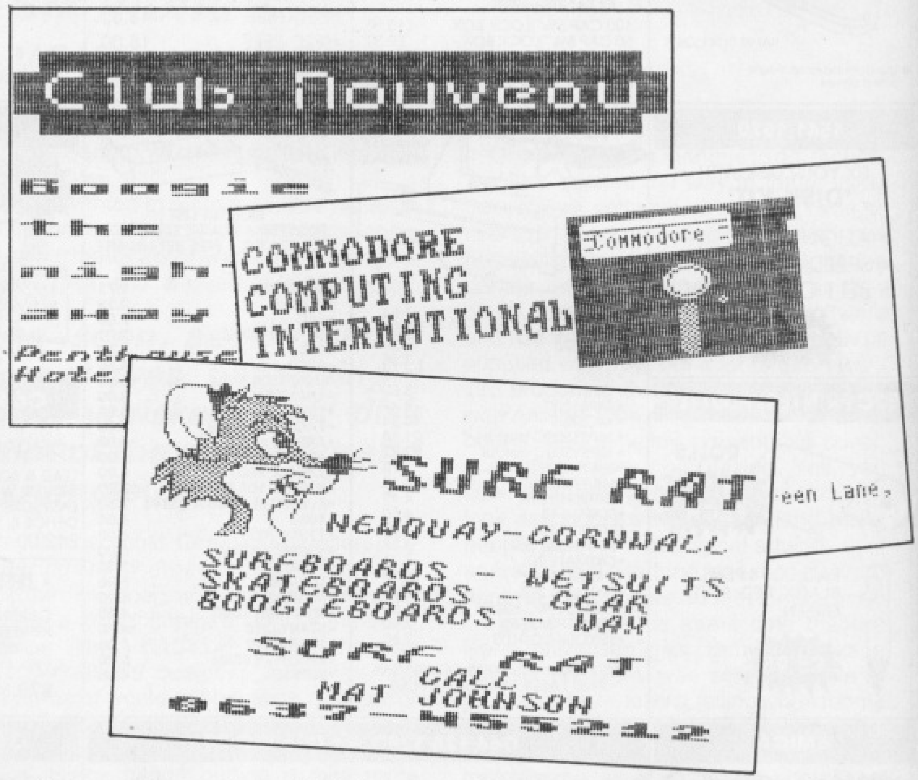
Finally you may save the card to disk or print your creation on a sheet of paper card supplied. The paper comes with the package as tractor feed continuous stationery which has fine perforations between the cards so it is a simple matter of tearing each card out when you have finished.

> ***"The program has a great educational value and would benefit any college, school or individual with an interest in print design and layout"***

The cards produced using this kit are intended for fun as recreational and educational purposes. The program has a great educational value and would benefit any college, school or individual with an interest in print design and layout. The quality obtained from a C64 1525 compatible printer is not intended to be as good as a real card produced by a professional trade printers. However, the principals remain exactly the same if not the quality.

When you first use the program disk you are advised to get the printer driver file set up correctly. There are several types to choose from, once you have picked the right one to suit your configuration it will be saved onto the program disk so that it is automatically set each time you run the main program.

Once you load Business Card Maker you are presented by a familiar WIMP operating system making it easy to select the next operation. A pointer can be moved around the screen either by joystick or keyboard. The options available on the main menu bar give you access to more sub menus with all the varied functions that enable you to make the perfect card.



There are five cards on disk already prepared, you can load these examples and practise making changes to get familiar with the workings of Business Card Maker. The font selection from the menu bar gives a choice of twenty-two different typefaces. Most of these have options allowing you to change to double height and also double width, making for large type suitable for headings. Other options let you choose underlining or even reversed out type. One nice feature is that BCM allows type to be overprinted onto the background and over the logos, enabling some very interesting effects. If you want the type to erase anything and everything under it you may also choose this option.

The menu bar at the top of the screen has another item called the Icon Maker. This option will allow you to create and design an icon for use in your business card that will exactly suit your needs. The disk contains a large range of icons ready to use. The kind of thing you get are symbols and images widely varied to suit a range of subjects. You may decide to draw your own. The usual drawing commands such as Circle, Box, Line, Fill, Draw will enable the user to create almost anything. Each icon may be saved to disk ready for use later or dropped onto the card currently being worked on.

Four positions, top-left, bottom-right etc. can be selected for placing the icon onto the card. It is advisable when producing a card to work out the design and position of the logo first. This recommended way will allow you to see the spaces left for your text to be entered into.

If you already own "Print Shop" you are able to utilise all the Print Shop clip-art graphic images into any BCM card. I have printed a few examples just for fun and for you to see. They were simple to design and print. I had great fun producing them.

B.C.

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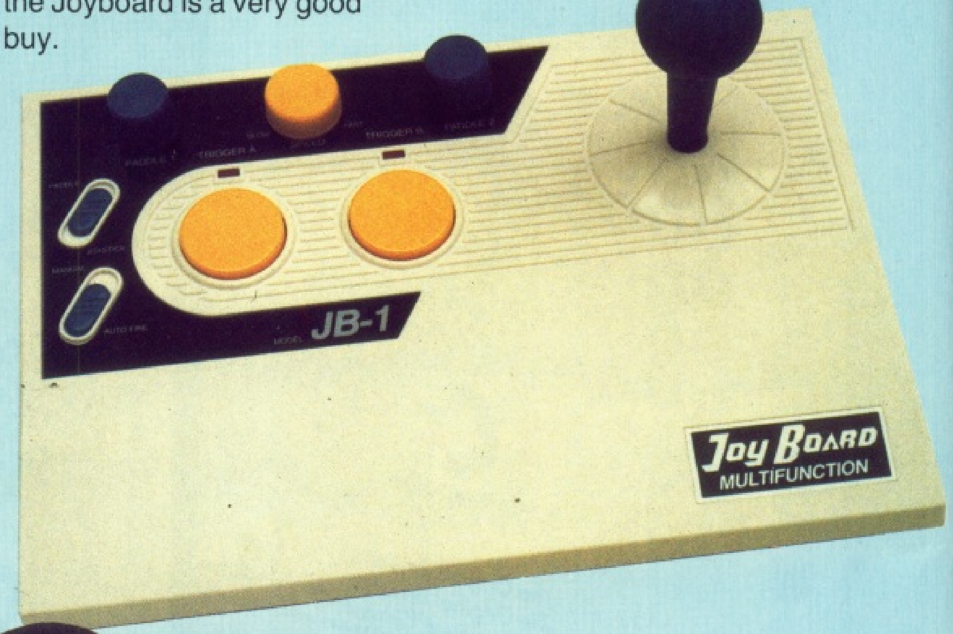
Give it S

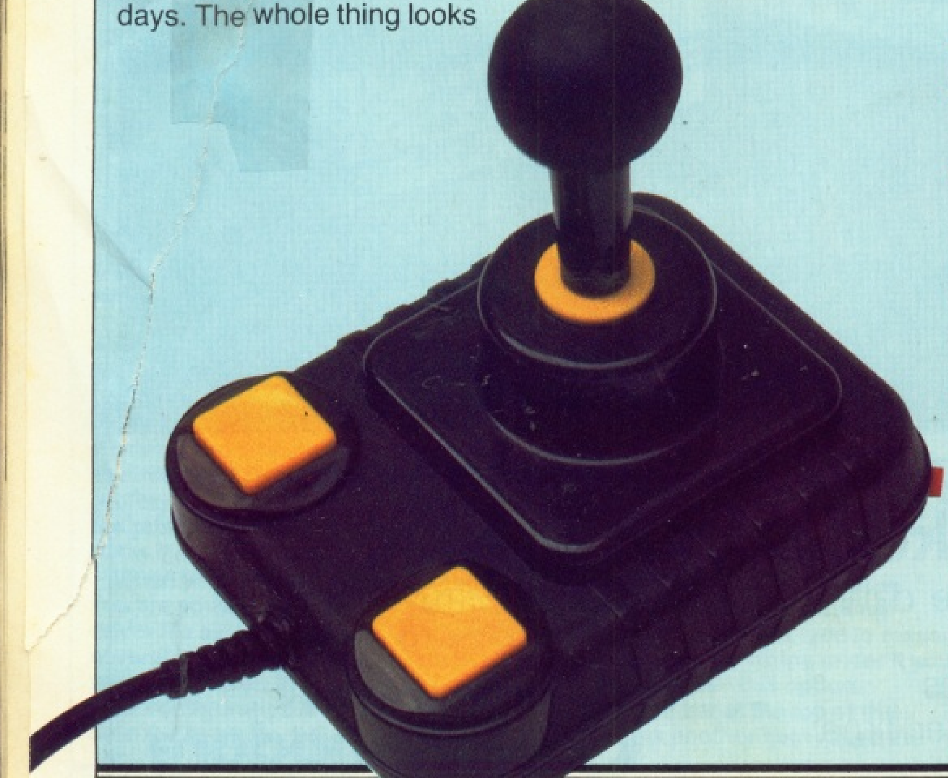
With the PC show still echoing around
this is about the time when your old fa
to treat your callouses to a shiny ne
buttons? There are big sticks and sm
take a look

Joyboard

(EUROMAX) £24.95
The biggest of all the sticks around, the Joyboard is an update of the Microhandler. Its large white case houses the stick, two large fire buttons, and auto-fire toggle, an auto-fire speed controller and two paddles.

A choice of either suckers or small rubber "feet" can be used as stabilizers (the feet work very well). The stick has some good corners but is let down slightly by a bit too much travel. The variable speed autofire is an excellent idea which allows you to alter the speed so as to get a perfect stream of fire. Xenon is the absolute example, where a standard autofire is ineffective but the Joyboard is excellent. The two paddles are a nice addition but unfortunately their potential is rarely used in games these days. The whole thing looks very nice, LEDs accompanying fire button presses. £24.95 is not cheap considering the slightly weak feel to the stick, but otherwise the Joyboard is a very good buy.





Professional Autofire

(EUROMAX) £18.95
The basic design of the Professional Autofire was derived from the classic Kempston Competition Pro, and what better origins could a joystick have? It's microswitches all the way with this one, apart from the autofire switch that is.

A very good solid feel makes this a winner for just about every type of game, from the joystick waggler to the shoot 'em up. Very definite diagonals on the stick and audible clicks from all the switches make this one of the best around and one of my personal favourites. Highly recommended.

Some Stick

ound yo ead and Christmas just around the corner,
old faithf ysticks start to give out. What better time
ny new c rol with super turbo clickety-click fire
d small s s, fat and thin sticks to suit everyone, so
ook and e your pick . . .

Competition Pro Clear

(DYNAMICS) £15.95

The Clear is identical to the Competition Pro (still available at £14.95) but for its transparent casing. This allows curious eyes to explore the stick's workings without taking it apart (Wow!).

A micro-switched stick means good responsive controls, and while the Clear's buttons are not micro-switched they still do the business. A strong contender in the best of the joystick market, marginally outdone by its big brother . . .

Competition Pro Extra

(DYNAMICS) £16.49

Looks identical to the Clear, but has the added bonus of micro-switched fire buttons and an autofire mode. A unique feature is the slow motion mode which acts like the autofire (rapidly switching on and off) but works on joystick movements. However, its use is limited to cheating on a few joystick waggling games. The stick can tend to become a little stiff but it remains my favourite of the current batch. Highly recommended.

Joystar

(EUROMAX) £9.95

Right down the opposite end of the price range we find the Joystar. Designed for either table-top or hand-held control, it has a couple of fire buttons, one on the top of the stick and the other at the front of the base. An autofire switch can be found hiding round at the back.

Rather than value for money, the Joystar is more cheap and nasty. The stick moves in a horrible long squishy motion leaving you in doubt as to whether you connected that diagonal. On equal terms are the buttons with a similarly unsatisfactory feel. Save your money for a worthwhile stick.

cont. on next page

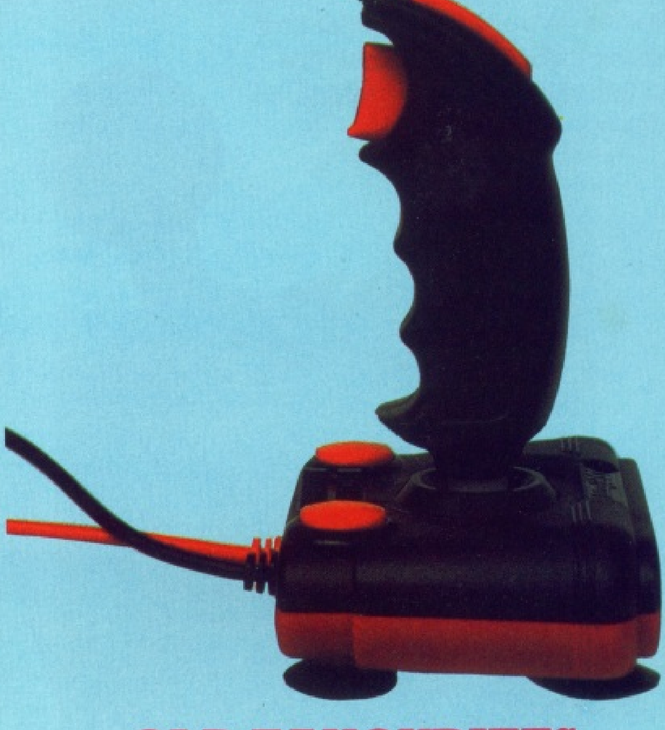
Give it S

Cheetah 125 Special

(CHEETAH) £12.99

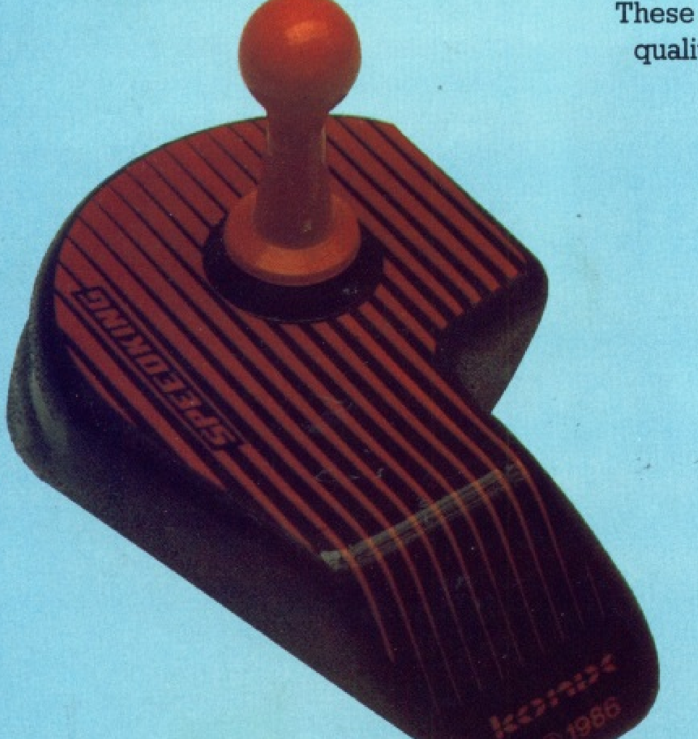
This strange stick uses the pistol grip design of the Quickshot to house four independent fire buttons and an autofire switch. Also the stick can be rotated a short way a bit like Ikari Warriors arcade machine. Two leads are needed for all the functions, one plugging into each port.

The trouble with all these additional features is that there has yet to be a game that uses them. All the buttons are very unresponsive and the stick has a weak feel to it. In short, a pretty poor stick all round.



OLD FAVOURITES

These have been around for a while but still remain popular, quality sticks that cater for those who like something a bit different.



Speedking

(KONIX) £11.95

Designed to be as comfortable as possible, it sits neatly in a cupped hand while the other controls the short stick. The fire button has been placed on the right side so as to be operated by the index finger. So generous are those Konix folk, they even bundle it with a free copy of Thing Bounces Back.

Loud micro-switches give a definite feel which is only spoilt by the lack of corners in the diagonals. Constant rapid fire can lead to finger cramps. Though not one of my favourites, the Speedking proves popular with those who find the more traditional design a bit of a handful. It has also earned the reputation of standing up to the roughest treatment even the most frenzied stick waggler can hand out.

me Stick

Quickshot II Turbo

(Spectravideo) £14.95

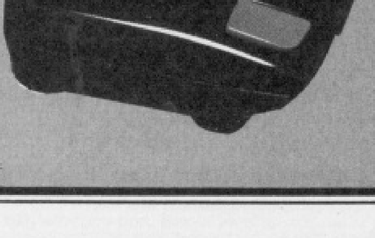
The best of the pistol grip sticks, with a sleek look and responsive switches. An autofire toggle at the rear avoids aching fingers.

I wouldn't choose this for my only stick, but the Turbo is a great stick to have in your collection. Because of its one handed control, your other hand is left free for keyboard controls. The Turbo also gives that extra touch of realism for flight simulators.

Coming your way soon . . .

Suncom have two new sticks, the Tac 30 and the Tac 50, upgrades of the Tacs 3 and 5. They are fully micro-switched and have "new aircraft-style ergonomic designed handles". The Tac 50 has a variable speed autofire, a feature Suncom believe is being used for the first time (look at the Joyboard in this article to find out otherwise). The Tac 30 will sell for £13.99, the Tac 50 for £14.99.

T.H.



Konix

MEGABLASTER JOYSTICK

KONIX who have now sold almost 3 million units of their Speed King joystick worldwide.

The Predator which will probably retail for slightly under £13 and the Megablaster which will probably sell for under £8, are totally different in appearance from the Speed King.

The 2 joysticks appear to be very similar, the obvious differences being that the Megablaster is only three-quarters the size of its big brother and also has a different handle. Internally, however, the 2 products are different, the Predator is operated by micro-switches and the Megablaster operates under a more traditional mechanism.

The Predator and the Megablaster can be used with the Commodore 64, 128 and Amiga computers.

We'll Make You See Things Differently

continued from page 21

nearby Gloucester Hotel to see their own and affiliated labels products — were there. Electronic Arts were able to upstage other announcements at the show by releasing the news that they had signed the U.K. distribution rights as an affiliated label for the leading French company, Ubisoft who have some exciting products to be launched shortly.

The big companies certainly set out to impress. U.S. Gold — 'Masters of the Game' as they called themselves — had an immense stand. In fact, two stands to allow their business visitors to hear above the deafening cacophony outside. Geoff Brown and Tim Chaney, and the many other executives needed to run the vast and still expanding U.S. Gold/Centresoft empire received a constant stream of visitors at one stand, while the general public stood open-mouthed before the videoed goodies being demonstrated on the other.

Ocean too made a strong impact with a huge, well-designed stand built around their lead product for the Christmas period — Operation Wolf, Ocean's big Coin-Up conversion.

In spite of the big stands, undoubtedly the greatest sensation at the show was caused by Microprose's 14 seater simulator. There were, throughout the Show, long queues right around the area of hundreds of people waiting to board this amazing vehicle, which, though relatively static in reality, gave a thorougly believable impression of being aboard everything from a launching spacecraft to a racing motorcycle. When you descended you were awarded a badge saying you had survived the experience, which many visitors wore with something like pride — probably at not being sick!

Nearly all the other well-known names in the games field were also showing their wares. Grandslam, one of the fastest rising software manufacturers, showed some interesting new developments Gremlin and Hewsom combined before the Show to host one of the big parties at the fashionable Stringfellow's Club.

Telecomsoft, now coming good with hit products like Starglider II and chartopper Carrier Command, not only mounted a vast stand but the dinner party of the show, which M.D. Paula Byrne hosted, the Party That No-one Wanted To Miss.

A new U.S. company Keypunch made its debut on the European scene with a range of C64 and IBM games and educational software. Psygnosis, Novagen, The Big Apple, Tynesoft, Mindscape, Elite, The Edge, Infogrammes, Mastertronic, Image Works, Linel, Level 9, Cascade, De Gale Marketing, Konix and French newcomer Ubisoft all made strong impressions. The Image Works Stand was particularly notable for its futuristic design, all steel pipes, looking as if it might take off at any moment.

Anco, whose name is still blessed by C16 owners, had the largest stand of its history and Anil Gupta told CCI that not only is Anco successful on this side of the Atlantic, but has now set up in the U.S., particularly for its Amiga and PC software.

Aegis' Michelle Mehtorian

NOTHING NEW

Nothing much new was revealed for the first time at the Show. There are these days few secrets that can be exploded with bombshell effect. For most of the reasonably informed public, the Show was little more than reinforcing of ideas that have already been presented through the press or at previous events like the Commodore Show. It was a way of building up toward the Christmas period in which a major part of the business of the games companies takes place.

military vehicles?"

"Well, it's a game about attacking armies."

"Do they think that seeing an armoured personnel carrier will make more people buy their game?"

"I suppose they do."

"And can people buy Operation Wolf from Ocean here?"

"No, it is not out yet. They won't release it 'till Chrismas."

"But that's three months away!"

"Yes, but game players don't forget. Anway, magazines like CCI keep on reminding them"

"About Operation Wolf."

"And other games that will be big at Christmas like Thunderblades from this company, U.S. Gold. They've got two stands."

"Why?" she asks gazing around the huge expanse where vidoes perched high on columns below, squark and clatter, their screens flashing in anguished rivalry.

"Probably to let their staff get away from the noise," I suggest.

"Are there any other big games for Christmas — both of those seem rather violent for a season of peace and goodwill to all men."

"Well, there is one other game but that isn't any more peaceful. It's called Afterburner and it comes from a company called Mediagenic."

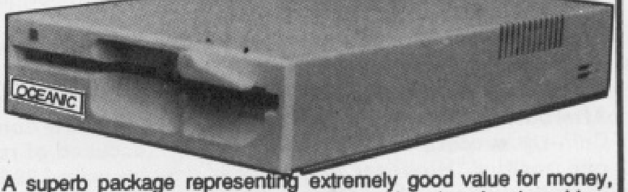
continued on page 32

Evesham Micros

All prices include VAT/delivery

OCEANIC OC-118

Previously sold as 'Excelerator Plus'



A superb package representing extremely good value for money, combining the Oceanic OC-118 disk drive (previously sold as 'Excelerator+') and the sophisticated GEOS system. Said by COMPUTE's Gazette to have "dramatic improvements over the 1541 in quality and reliability", the drive is a stylish and attractive compact unit featuring a direct drive motor and its own external power supply. GEOS brings the power of a graphic interface and integrated disk turbo to your '64 and includes geoPAINT, a graphic workshop, geoWRITE, a WYSIWIG word processor and many Desk Accessories. Many more extensions available - see below.

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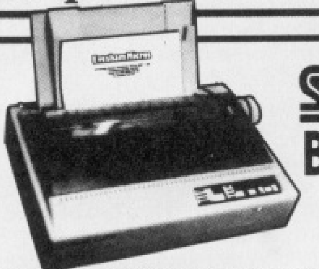
GEOWRITE WORKSHOP	£24.95	GEOCALC 128	£32.95
FONTPACK+ 64/128	£16.95	GEOFILE 128	£32.95
GEOSPELL	£16.95		



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Only £219.00

Colour version also available,

Only £269.00

Prices include two extra black ribbons free of charge

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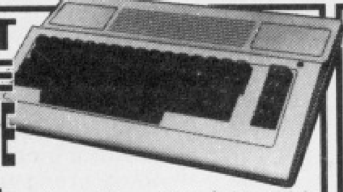

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DISC DISECTOR V5.0 ...... Disk backup/utility package, very powerful £19.95

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There is going to be strong competition this winter for software buyers' money. Three main contenders are thought to be the strongest of the highly valuable Chrimstas top spot. In previous years this has gone to U.S. Gold. First with Gauntlet two years ago, and last year with Outrun. This year Mediagenic are confidently predicting that Afterburner, one of the great recent Coin-Up success will hit the number one position. However that view is fiercely challenged by Ocean's David Ward and the U.S. Gold team. Ocean believe that they have the winner, another Coin-Op smash, Operation Wolf, and U.S. Gold are as confident with their Pepsi Challenge game Thunderblades.

The rumours are that the odds being offered are even money Thunderblades, 6 to 4 Operation Wolf and 3 to 1 Afterburner.

Who ends up at the top when the dust has settled may have less to do with thequality of the game than the sheer marketing muscle that the company can bring to bear on all the complex distribution channels that carry products out to the public. That is what is making U.S. Gold's Thunderblades presently favourite. Gold's reputation and skills established with the last two Number Ones at Christmas and are thought likely to carry Thunderblades even against the better-known Afterburner. It will be interesting to see which makes it.

WHERE'S THE BEEF...

The general criticism levelled at the Show was that while it was probably more professionally produced than any previously, the actual products that were announced or shown were by no means revolutionary. That perhaps was the reason for the spate of rumours that shot across the Show every day. One amusing story was that a company, large and British, were, no doubt entirely falsely accused of running their newly launched 386 machine with the cables plugged into a Compaq 386 underneath the table! It does make it easier that way than trying to produce their own!

So the sense was that though it all looked good there wasn't, in the phrase aimed at U.S. Presidential candidate George Bush, much meat in the sandwich. Where, one could ask, was the beef?

Perhaps we are all too jaded and expect every year there to be something amazing and new, something that will make the computing earth move. It just doesn't happen that way. Progress is generally made in small steps. The state of the art is pushed forward gradually. Perhaps we will look back next year and realise that we had moved forward this from the last and that we will have moved forward a little each year, or maybe we will look back and say "It was a quiet year — except for the noisy videoes..."

"Where are they?"

Oh, they're not here."

"Not at the show?"

"No, they went to the Inn on the Park Hotel."

"Why?"

"Well, they were at the Show last year — it was called the PCW Show then — and they decided they didn't like it much."

"So they started their own show?"

"Yes. But they aren't the only ones. Another big company Electronic Arts have also set up a Show of their own in a hotel."

"The Inn on the Park?"

No, another hotel."

"So there are three shows?"

"There are more. Some other companies also took suites in hotels. But some like Microprose took stands at the Show and hospitality suites too. There was one company called Domark that said it wasn't coming to the Show but changed its mind and took a bus."

"A bus?"

"Oh, yes. See those double decker buses over there? Some companies have taken them instead of stands."

"Why do they want to spend their time in buses?"

"I don't know."

"Do the buses move?"

"I don't think so."

Even to me the whole story was beginning to sound very far fetched and I wasn't any closer to being able to answer her original question about what the Show was for...

"It that a Chinese company? she asked point. Above a stand reared a large ornate, rust-coloured oriental wooden gate.

"Mandarin? No they come from near Manchester."

"There doesn't seem to be anybody on this stand," she said. "And it looks unfinished. Did they run out of money or something?"

"No, actually, they're quite rich. They belong to British Telecom. I suppose they designed the stand this way for some reason."

She shook her head wonderingly.

"This, I said proudly, is the largest stand in the show. It belongs to Commodore.

"It looks very difficult to get into," she said. "Don't they want people to come in?"

"No, the idea was probably to make it impressive. Commodore have not been too successful in recent years. So this year they decided to push the boat out and make something spectacular."

"But you can't see what is going on. It all seems inside high walls. Is that to keep people out or keep people in?"

I looked at her. She was eyeing me as if I were taking part in some enormous deception. As if the whole PC Show were an attempt to create an illusion, a mirage, a picture of something that may or may not exist but certainly was very different from the image it presented of itself. Simulators you could not buy...videos of games that did not yet exist...strange stands that seemed to have been designed more to confuse than enlighten...

It had all seemed pretty normal to me until my guest had looked at it with innocent eyes and made me see it differently like the statement over the Commodore Stand "We'll help you see things differently".

"So what is the PC Show for?" she insisted.

"It is...to make the organisers money," I said.

"Is that all?"

"No. It is also to give the exhibiting companies a bit of excitement and ego massage."

"Was there anything new or special — except the Sinclair computer they can't buy?"

"Not really, practically everything is known and written about before."

"So they come for a bit of fun..."

"Is there anything wrong with that?" I asked defensively.

"No, I suppose not. So that's what the PC Show is for... But wouldn't they be better off at home playing with their computers?"

I looked at here. She has this unfortunate habit of being right.

"Doesn't live personal involvement have value? Isn't social intercourse in itself life enhancing?" I demanded desperately.

"Between large groups or on a one-to-one basis?" she replied.

"Both."

She looked around the crowded noisy show. "I prefer," she said "a one-to-one basis... Why don't we go home?"

So we did.

Later on I said into her ear "I think I know what the PC Show is for."

"Oh do you?" she said drowsily.

"Yes. It has been cleverly designed to make every one happy...that they don't have to endure it more than once a year."

But I think she was already asleep.

Oh well, see you, I suppose, at the PC Show if we can't avoid it next year...

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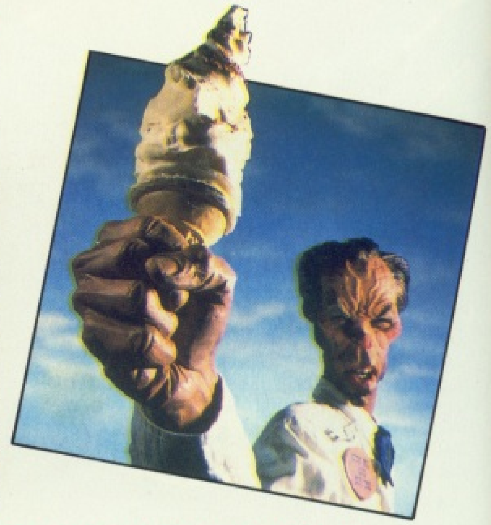

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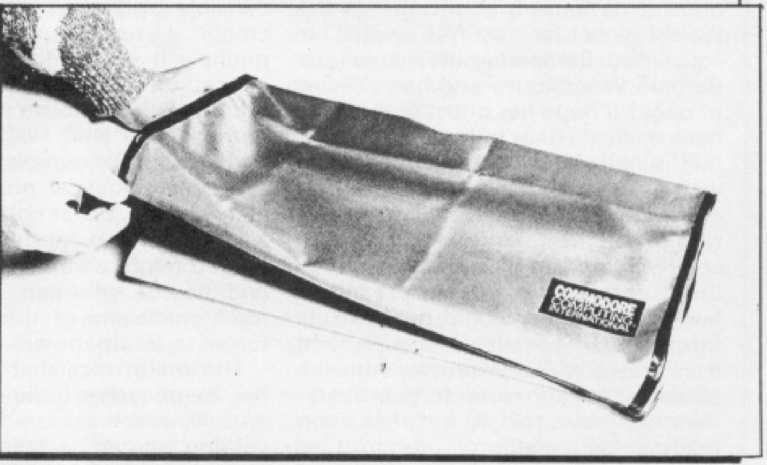

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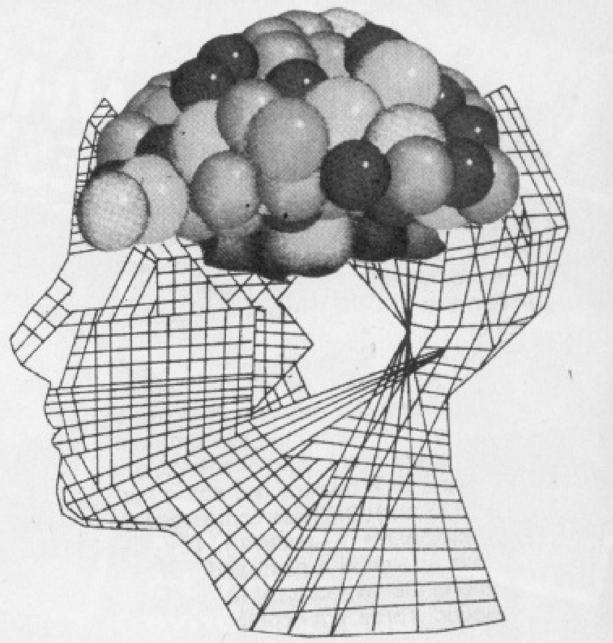

Artificial Intelligence and Commodore Computers

Part IV

EVERY program is a set of rules and instructions, at least as far the computer is concerned. Our dumb slave merely obeys those instructions and carries out the tasks set down for it. If a program does not work then we can hardly say it is the fault of the computer although the popular press are always keen to publish stories about computers sending out gas bills for thousands and thousands of pounds. How much better it would be if they printed stories about the operator who keyed the figure in incorrectly, of the programmer who set up the system in the first place and either got it wrong or failed to make allowances for a human error that should have been picked up on. If Mrs Smith has been getting a gas bill of £50 for the last two years, is it asking too much of a programmer on such an important system that they put in an alarm when Mrs Smith is about to be sent a bill for £50,000?

Of course it isn't, a computer can only do what it is told. It is how we make it do what it is told that is the keynote as far as A.I. work is concerned. Remember the marvellous Barbara Woodhouse and her training of dogs? (I hope her ghost comes and haunts next door's hound, then it might learn not to eat postmen). She was, in effect, trying to train a dog artificially to behave intelligently on receipt of a set or rules and commands. More often than not, when the redoubtable Mrs Woodhouse turned her back the dog would revert to its former bad behaviour, but it had learnt for a while. When we turn the power off the computer forgets everything we have told it, but it is soon ready to learn again.

This strict teaching of rules and instructions does not mean that we can't have a little bit of fun along the way, and so before we consider this month's extension to the Eliza program we shall have a look at a spot of mathematical madness and a numerical technique called Hailstoning.

"So far nobody has found a number which doesn't obey the rule, so you might care to take listing one and see if you can confound the mathematicians of the world."

I first came across this topic in another computer magazine (spit) several years ago, and it immediately struck me as being both interesting and harmless at one and the same time. We can write a simple computer program to obey the rules, and listing one is precisely that. What we have to do is as follows: take any positive whole number, any number. If it is divisible by 2 then do just that and create a new number, otherwise multiply it by 3, add 1, and create a new number that way. The interesting thing is this: it doesn't matter which number you start with, you always end up with the number 1. There is no strict mathematical proof for this, it just happens. So far nobody has found a number which doesn't obey the rule, so you might care to take listing one and see if you can confound the mathematicians of the world. Don't forget to let us know if you do!

The main rules that the computer has to obey are outlined in lines 50 and 60, and these are the rules concerning numerical manipulation that we covered in the last paragraph. The variable nt keeps track of the number of turns that it takes for the number to get down to one. For example, if we started with the number 13 the sequence would be 13, 40, 20, 10, 5, 16, 8, 4, 2, 1, which is a total of 9 turns altogether. If a number in that sequence is higher than any other number that we have so far had in the sequence, then this is stored in the variable hs. The overall highest number is stored is oh, and the number of turns taken to start off from the number h is stored in ns (see line 90). Lines 100 to 160 print out the information for us, before line 70 continues the program on its merry way around the loop. To change the starting numbers just alter the parameters in line 20. Of particular interest are the numbers 26, 27 and 28. 26 and 28 are relatively trivial, but 27 reaches a high number of 9,232 before it eventually returns to 1. Why should this be so? No mathematical formula can be found that will tell us at a glance how many turns it will take for a particular number to 1. Perhaps you could find one for us?

"We're gradually approaching the stage where the computer will begin to learn something about the user from the phrases that he or she types in."

But of course the computer forgets these rules as soon as we turn it off. We humans can be turned off by going to sleep (in more ways than one, I suppose!) but hopefully we manage to remember most of what we know when we wake up again the next morning. The computer has to be reprogrammed and taught again, and *cont.*

with that in mind it's now time to update our Eliza program.

As usual we shall be concentrating on new additions to the program and alterations to existing parts of it. This latter is necessary as the program begins to grow in size, corresponding to a growing need to take into ever greater account that which the user is typing in. The program itself will never, ever (? — not on current Commodore computers, but who knows), replace a human psychiatrist, and I sincerely hope that nobody takes too much serious notice of the response that the computer gives, but we're gradually approaching the stage where the computer will begin to learn something about the user from the phrases that he or she types in. No attempt is yet being made to store this 'learning curve', and indeed we will leave it up to you if you want to start filing data onto disk or tape, but next month will see the start of data correlation and a partial linking between the various parts of the program as the computer begins to try and make some sense out of its human correspondent.

For we shall be looking at one possible extension to the way in which the computer will look at a sentence, as well as another sub-topic of discussion, namely modern technology. As always, you are free to extend the boundaries of the program and bring your own ideas about a) artificial intelligence and b) the people who might be using your copy of the program, into your own version of it. To paraphase Antonio de Guevera, "Talkative people say many things to a computer which they deplore in company."

Even with the as yet unfinished version that to which we have progressed, I sometimes find myself typing in the most surprising things! Perhaps you might like to include a swear word routine in your own version of it (one way of doing so is to study the technique used in lines 17 and 18 of this month's listing) in order to weed out the occasional rude phrase or saying that might be typed in. I would not do one for two reasons. One, it would never be published in the magazine anyway, and quite right too. Secondly, I very rarely swear myself, and see no reason why I should take into consideration those people who constantly do so. A sign of a poor vocabulary, I always think. Anyway, enough philosophical digression, back to the listing.

Line 3 tells us that we've added some data to the program, and this is to be found in lines 1000 and 1010. Here we have not only the words themselves but also the lengths of the words, which makes for easier checking in the aforementioned lines 17 and 18. All sorts of words, or groupings of words, could be inserted into the program in a similar way. Perhaps someone who might be looking at your copy of the program might be passionately interested in football, in which case you could add such groupings as "over", "moon", "sick", "parrot", and so on.

In order to store these words in memory we need to dimension a couple of arrays, and this is also done in line 3. Other similar arrays might be used in your own program as necessary. Once the information has been read in we are in a position to check on it, but before doing so we must add lines 13 and 16. Line 13 is just an extension to the existing program, and encourages the user if they've started off a sentence with "because", while line 16 is a familiar sort of check to see whether the user is still harping on about the subject of technology. This would take us off to line 500 an beyond, a set of routines which themselves make use of other, existing, ones. We will examine those, and the necessary modifications to the program as it currently stands, when we get to them.

First of all, some changes to the start of the program, lines 17 and 18 allow us to look for our 'technology' words, although they could equally well be replaced by checks for other groups of words. If a word is round, and is of the correct length, then we go to line 500. For instance, the fifth element of the array tt$() is "stereo", and this corresponds to the fifth element of the array tt(). This latter holds the length of the word, six characters in this instance. Thus we can search for not only "stereo" but also such variants as "stereos" or "stereos" (whatever the plural might be!), "stereo's" and so on.

> ***"Line 35 looks for a sentence beginning with the word "If". A small word, but one that changes the whole meaning of a sentence."***

Our next lot of additions and alterations occupy lines 35 to 38, and are used for checking parts of the input from the user. For example line 35 looks for a sentence beginning with the word "if". A small word, but one that changes the whole meaning of a sentence. The computer admonishes the user for employing that word, and awaits another input.

Similarly, lines 36 and 37 look for a sentence beginning with "but", another word that is short on length but long on meaning. It usually signals some sort of protest as well ("but I didn't mean to do it"), and because of this the computer will merely print a couple of phrases and ignore the rest of the users's input.

The last of this copy of lines, line 38, takes up the tale from line 13 and makes a comment if the user begins a sentence with the word "because". Because, as the comment in line 38 tells us, the use of that word implies reasoning. As in "because I thought it was right", for instance.

The next group of four additions and one alteration concern themselves with the input routine, and a fault that could cause some peculiar output from the computer to occur on occasion. Line 270 starts us off, and if the user has come to the end of their input then instead of the original RETURN we trek off to line 292. Here we remove any commas that the user might have typed in, so that they won't be stored along with the words. It is the words that's we are primarily interested in, not the grammar associated with them.

Lines 336 to 341 are an alteration to cover the use of just one word, although this is the sort of thing that you could well be looking at when you seek to amend the program for your own use. It was done because I once typed in the remark "because it's a spelling mistake, stupid" in response to a comment from the computer. I felt it reasonable to a) study the use of the word "because", b) remove the comma, and c) make some comment about the use of the word "stupid". Other words could easily be added as well.

Apart from the data in lines 1000 and 1010, we just have lines 358 and 359 to look at bfore getting onto the sub-topic of technology. These are only there to ensure that program flow always returns to the correct place, and the use of the mn and tn variables ensures that this is sorted out: mn for money talking, or tn for technology talking.

This then brings us to line 500, and as the REM statement so helpfully points out this is the section of the program that deals with the user, or patient, talking about technology. The first time we reach this routine the computer prints up some comments of its own about technology and then sets the variable tflag so that the rest of the program knows that we're dealing with this particular topic. Lines 509 and 510 make a trip to various parts of the program so that a number of possible inputs can be easily dealt

continued

with and the user's comment sorted out into individual words.

Lines 512 then decides whether or not our resident computer psychiatrist will make a learned "hmm..." before repeating the user's input. Remember that each individual word of that input is stored in various parts of the array s$(), and that the variable a stores the number of words. This array is dimensioned at the very start of the program, so you might wish to increase the number of elements in it if you think that someone is going to be particularly chatty. Lines 516 to 519 then form the first of several checks on the input, and in this case they merely repeat the same sort of check as the 'money' routine from last month. Searching for negatives, in other words.

Our next check occupies lines 520 to 526, and looks to see if the user is talking about two different, but possibly connected, things at the same time. For example, they might have typed "I hate television and radio", in which case the computer will tell them to concentrate on talking about one thing at a time. We cannot possibly hope to emulate the highly trained professional psychiatrist, but we can at least give the impression of a conversational program that really is learning something about the user. Assuming that our user is only discussing one topic, we arrive at the third check. This is unusual, in that it is a three way check, something we have not done before by which you could easily use again and again. We are looking for excesses, as the comments in lines 537 to 539 tell us, and the object of this check is just to look for the words much, not, little, and too. If the word too is used on its own, then only the variable d will be increased and the comment in line 539 comes into play. Otherwise, the various variables are incremented and the relevant comment printed.

Our final two checks as listed, although you can obviously add more, look for emotions at two opposite extremes. These are calm and anger, or soothe and annoy, as lines 540 to 546 and 550 to 556 tell us. Users may confide to the program that listening to the radio calms them down, which is no bad thing, but they might equally well confess that they like playing their stereo so loud that it deliberately annoys the neighbours, and behaviour of that sort is to be frowned upon. Line 560 is our final "back to you" comment.

That's it for this month, with just two instalments to go. I hope you are adding your own routines to the program, but whether you are or not we'll be back next month with a few extensions of my own and a few more thoughts for you to ponder on, artificially or otherwise. Bye for now.

P.G.

```
Listing One - Hailstone Numbers
10 REM hailstone numbers
20 FOR i=1 TO 1000
30 a=i
40 hs=0:nt=0
50 nt=nt+1:IF a/2=INT(a/2) THEN a=a/2:GOTO 70
60 a=a*3+1
70 IF a>hs THEN hs=a
80 IF a<>1 THEN 50
90 IF hs>oh THEN oh=hs:h=i:ns=nt
100 PRINT "[clr]"
110 PRINT "Starting number = ";i
120 PRINT "Number of turns = ";nt
130 PRINT "Highest number  = ";hs
140 PRINT "Overall highest = ";oh;
150 PRINT " in ";ns
160 PRINT "turns from a starting number of ";h
170 PRINT:NEXT
Listing Two - Technology Additions to Eliza

3 tt=10:DIM tt$(10),tt(10):FOR i=1 TO 10:READ tt$(i),tt(i):NEXT

13 bf=0:IF LEFT$(cm$,7)="because" THEN cm$=MID$(cm$,9):bf=1

16 IF tflag=1 THEN 500
17 FOR k=1 TO tt:IF MID$(cm$,i,tt(k))=tt$(k) THEN 500
18 NEXT k

35 IF LEFT$(cm$,2)="if" THEN PRINT "If, if, if!  Don't 'if' me!":GOTO 10
36 IF LEFT$(cm$,3)="but" THEN PRINT "But me no 'but's.":PRINT"Ha, I've always ";
37 IF LEFT$(cm$,3)="but" THEN PRINT "wanted to say that.":PRINT:PRINT"Carry on."
:GOTO 10
38 IF bf=1 THEN PRINT"Because implies reasoning, good.":GOTO 50

270 IF z=13 THEN PRINT " ";CHR$(8):GOTO 292

292 FOR i=1 TO LEN(cm$)
294 IF MID$(cm$,i,1)="," THEN cm$=LEFT$(cm$,i-1)+MID$(cm$,i+1):GOTO 298
296 NEXT
298 RETURN

336 IF MID$(cm$,i,1)=" " THEN a=a+1:s$(a)=MID$(cm$,i+1):GOTO 338
337 NEXT
338 IF a=0 THEN PRINT "One word answers are not very meaningful.":GOTO 10
339 FOR i=1 TO a:IF s$(i)="stupid" THEN s$(i)="":PRINT"Less of the stupid!":GOTO
 341
340 NEXT
341 FOR i=1 TO a

358 NEXT:IF mn=1 THEN 408
359 IF tn=1 THEN 510
```

continued on page 85

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Digitizing

Sublogic is the name behind a single program's 250 weeks in the U.S charts. CCI takes a look behind the legend.

CORNFED genuius...is what someone has called Sublogic. By now the corn should be as high as an elephant's eye in the vast fields near Champaign, Illinois, where Sublogic is based. But the drought that struck large parts of the U.S.A. has badly affected the area, leaving the farms of "The breadbasket of America" — and sometimes the world — looking, from the air like a brown, patchwork quilt. From the air? Well, anyone who has used Sublogic's legendary Flight Simulator would immediately recognise the detailed scenery around Champaign and Chicago, 120 nautical miles away, as very familiar. When CCI visited Sublogic there was also a defininte sense of déja vu. For one of the two men responsible for the creation and continuation of Flight Simulator, Stu Moment, the present Chairman of the company, piloted us in Sublogic's own Cessna 310 Skywalker twin-engined plane from Miegs Field — exactly as seen on Flight Simulator complete with Observatory and all — to Champaign's own small but neat airfield. Stu Moment flew the Skywalker with obvious ease and confidence, which is not surprising, as he was for some years a flying instructor at the University of Illinois, which is also based in Champaign. One of his student pilots there was a certain Bruce Artwick, now the President of Sublogic and the programming intelligence behind all Sublogic's meticulously accurate products.

It was Moment and Artwick's joint interest in flying that brought them together, but Artwick had already been working on creating computer programs for 3D graphics which they began to sell from small classified ads in semi-technical magazines.

Stu Moment is a quiet, shy man. He has shown a reluctance to meet the press and the interview with CCI is thought to be the first he has ever given.

Moment was fascinated with flying even as a boy. He flew radio controlled models and just as soon as he was old enough at 16 took his first flying lessons. At seventeen he qualified for his pilot's licence and within a short time was instructing other keen flyers.

Someone has commented that flying is not in itself either a difficult or a dangerous occupation but that the air is even more unforgiving than the sea of neglect or carelessness.

Sublogic's Boss is a perfect example to any pupil pilot of the care and close attention to detail that makes for safety in the air.

He takes out his manual before

Stu Moment, SubLOGIC's Chairman — flying instructor turned tycoon.

Sublogic 10 Obsessive Years

October 1987 marked the tenth-year anniversary of SubLOGIC Corporation as a microcomputer software developer. In 1977 they introduced their first 3D graphics package based on the M6800 microprocessor. The market then consisted of an M6800 computer available from Southwest Technical Products and several kits that you could build in a trailer.

A trailer — or caravan, as we call it in the UK, is where SubLOGIC started. Bruce Artwick and Stu Moment had gone to school together in Champaign, Illinois at the University of Illinois in the early 1970's, graduating in Computer Engineering and Marketing respectively. Bruce developed a microprocessor-based 3D graphics package as part of his Master's thesis.

g the world...

even starting the engines and minutely goes through each instruction necessary to be checked, speaking every one aloud. You might think that he is doing it for the benefit of the passengers but there is the feeling that this is exactly the procedure he would follow if he were a student pilot.

Even if he were alone, the quiet voice would mutter the words to accompany each instrument checked or each action taken.

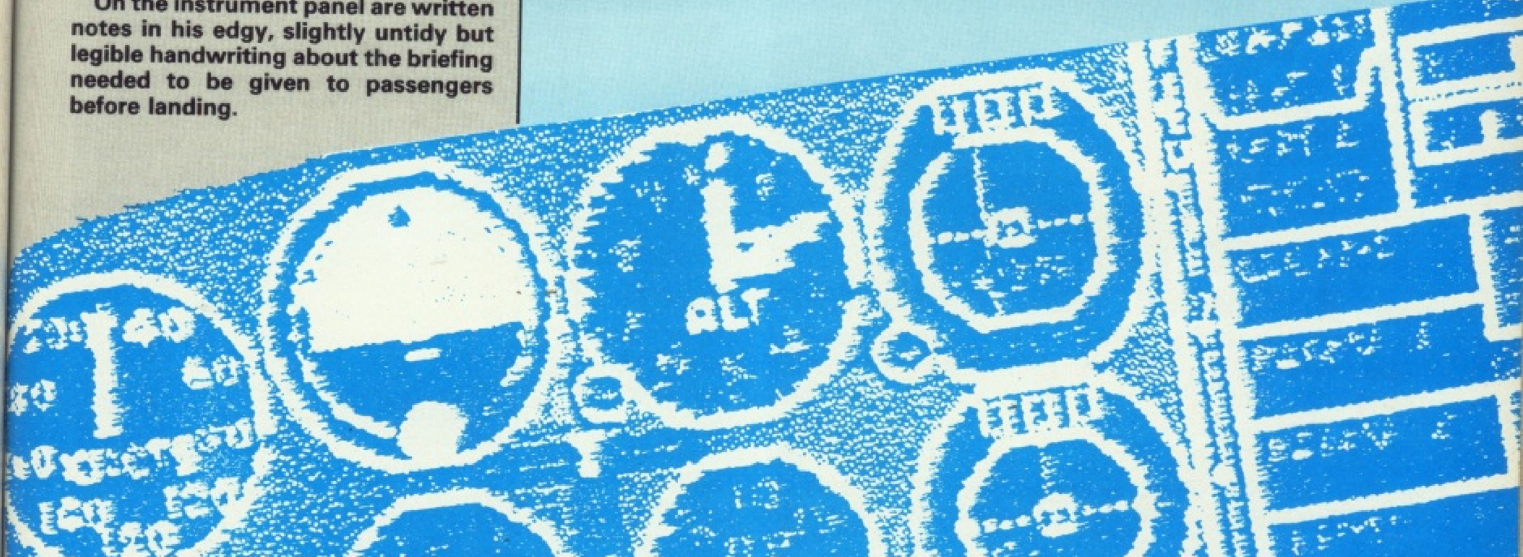
On the instrument panel are written notes in his edgy, slightly untidy but legible handwriting about the briefing needed to be given to passengers before landing.

There is another passenger in the plane who takes a very close interest in the Chairman's ultra-careful preparation for flight. Sublogic's recently appointed Marketing Manager is Debbie Israel, a remarkably attractive blonde in her early twenties. She is bright, forceful and already, in just a few months, ensuring that Sublogic is making an impact in areas, such as Europe, to a much greater degree than ever before.

The reason why she is taking such a sharp interest in the flying procedures is that Sublogic is about to purchase another plane, its third, specifically to start a flying club for employees, eight of whom are getting

Stu financed his degree by teaching as a flight instructor at the University airport, where Bruce was one of his students. It seems almost preordained that these two should turn their talents to the creation of microcomputer-based flight simulators, and form a company to market the results. SubLOGIC's first products were shipped from the back of Stu Moment's family trailer.

In 1979 Bruce developed Flight Simulator for the new Apple II computer, unlike the earlier computers, a preassembled machine that offered 16K ROM, a cassette program loader, and four different screen colours (including black). Sales of this program version soon eclipsed all others, including one for the Tandy Model I computer with its blocklike 60 × 40 screen resolution.



By 1981 SubLOGIC had grown to seven full-time employees, and Bruce had become full-time too and begun work on his grandest project yet; a new-generation flight simulator based on the more powerful 16-bit 8086 microprocessor at the heart of the soon-to-be announced IBM PC. This FS program, licensed to and marketed by Microsoft Corporation, would become a classic and was to be recognized as the benchmark test for PC compatibility in a market soon saturated with PC clones. Microsoft Flight Simulator was certainly technically impressive; the essentially complete conversion of this program to run on the newest bunch of 8-bit computers was even more so.

Jet was introduced for the IBM PC in June 1985, another manifestation of SubLOGIC's continuing evolution in the field of 3D graphics animation. This high-performance F-16/F-18 jet fighter simulator, the fun alternative to FS2's obsessive completeness, was released shortly thereafter for the Apple II Plus and Commodore 64 computers as well. These Jet programs were also compatible with other new SubLOGIC products known as Scenery Disks.

The Scenery Disk project was an extension of the original flight simulation concept, designed to expand the potential flying environment of their flight simulation products. Scenery development is an ongoing process, and disks covering large portions of the world are either in development or already available. Scenery Disks 1 through 6 (covering the western half of the United

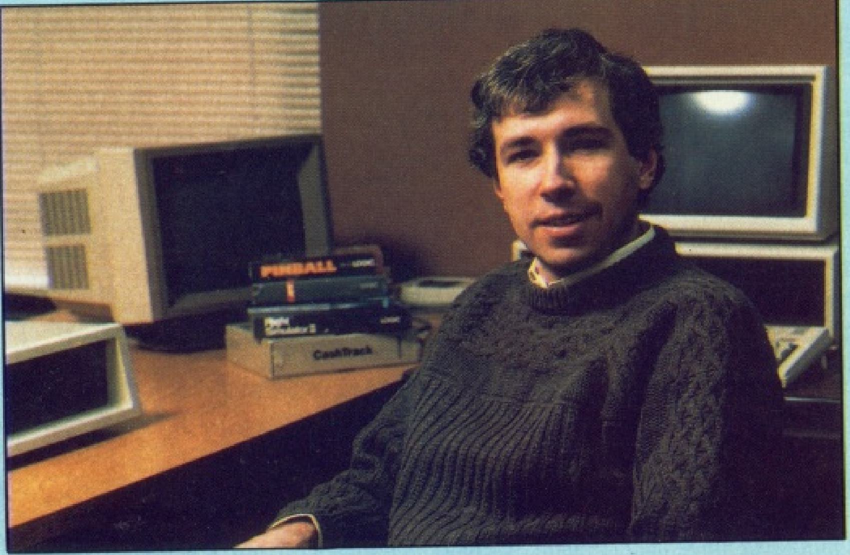
cont. on next page

continued from page 43

States) were released in 1985. They include a minimum of landmark details, but do provide the navigational and visual information necessary for IFR and VFR approaches and landings at all major airports.

Newer Scenery Disks (#7, #11, San Francisco Star, Japan and "Western European Tour") include all of the standard details found on the original six disks plus a great variety of selected landmarks and visual cues. The significantly increased quantity and quality of detail found on these newer Scenery Disks warrants their slightly higher price relative to the original Western US Disks.

Bruce Artwick, President of SubLOGIC Corporation.



A third generation Flight Simulator program, based on the new 68000 microprocessor, was released in 1986 for the Amiga. This version features pulldown menu selections, multiple window views, dramatically improved colour graphic displays, and a special multi-player flight mode accessible via modem or by computer cable connectors. A substantially enhanced Jet program incorporating these features, increased animation speeds, and improved graphics and sound effects is either already available or in development for the 68000 computers as well.

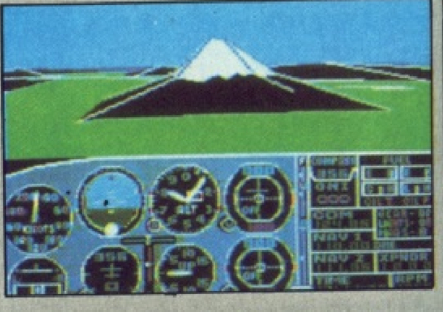
In March of 1987 Actionsoft released Up Periscope! for the Commodore 64/128 computers. This WWII submarine simulation developed with Captain John Patten USN (Ret.), a former US Submarine commander, offers exceptional realism and strategic depth.

ThunderChopper for the Commodore 64/128 computers was released later that year. With SubLOGIC's tremendous 3D graphic resources and Colonel Jack Rosenow's (USAF ret.) seasoned insight into the strategic considerations required in every helicopter scenario, this program has much more depth than simple, combat-oriented helicoper simulators. With an MS-DOS version of Up Periscope about to hit the market, and first year sales in excess of one million dollars, Actionsoft is off to an exciting and promising start.

SubLOGIC has opened offices in Europe and Japan and is now in the process of converting its products, beginning with German, French and Japanese translations.

SubLOGIC's two newest projects at this time are very interesting. An integrated control yoke (with rudder pedals) for use with its flight simulation products and Flight Simulator III, the next milestone in flight simulation, will provide increased realism and detail by taking advantage of the new technologies in microcomputer hardware.

Today, SubLOGIC's 3D graphics and animation routines continue to evolve with the technology. So do its development tools and flight equations, control and display hardware designs, and scenery modelling techniques. Hardware power and performance improvements in the years to come will bring SubLOGIC closer towards its longstanding goal, the creation of a simulation indistinguishable from the reality it represents.



together to form the first pilot's class.

This wish for everyone to get close to the reality which Sublogic's products so faithfully attempt to simulate no doubt helps strengthen the atmosphere of total attention to exact detail that enthralls its fans.

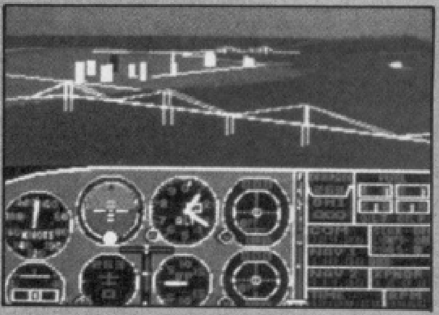
"There are 16,000 airports in the U.S." says Stu Moment, his eyes on the thick clouds 0ft that covers us as we drone over Lake Michigan. "9,000 of them private." You get the feeling that he is prepared to visit all of them if it is necessary to ensure that future Flight Simulators have covered the ground with sufficient accuracy.

One of Sublogic's leading programming experts, Mike Woodley, has been working for all the four years he has been with Sublogic on nothing but the Scenery disks. Developing all the time, he says, better techniques to create ever more accurate representations of areas as widely separated as Japan, Moscow, London and San Francisco. Sublogic is, they state quite seriously, out "To digitize the world" — to provide eventually, perhaps, access to any area in the world the chairborne pilot wants to fly.

Their concentration on exactly simulated reality is not confined to the air. For their Actionsoft label's submarine simultor they were able to call upon the expertise of another in-house staff member who had substantial personal experience to offer.

John Patten, their Vice President of Operations joined Sublogic in 1986 from a Nuclear Power Generating Plant. However before that he had been a "lifer" in the U.S. Navy where he commanded a nuclear submarine,

Digitizing the world...



which included in its missions under-the–ice–operations in the polar regions. Who better to give the professionally-qualified advice to make "Up Periscope" as close to the real thing as possible?

Up Periscope will go head-to-head with Microprose's Silent Service but Thunderchopper is very different from Gunship.

U.S. Gold, the giant British entertainment software house clearly view Sublogic's Actionsoft's range with its creators' reputation for complete accuracy enlivened with a much greater emphasis on entertainment as likely to be very attractive to a large European audience. They have signed an agreement to market Actionsoft products under a special label.

"It is a nice marriage." says Tim Chaney, U.S. Gold's Operations Director. "We need Sublogic's engineering capability. And we are a marketing company... We have been talking to Stu Moment for five or six years. We believed him when he said 'Yes".

All the details in Actionsoft products, Chaney points out, are checked by expert military personnel,. "We intend to take them from disk to cassette for the European market. But the extreme care with which they have been created and the wealth of documentation that Sublogic can provide means that making cassettes is much easier. The information we can get will make it quicker too and we won't have to strip anything out of the game."

That U.S. Gold should be attracted by the technical reputation of Sublogic is unsurprising. One third of Sublogic's 65 employees are "engineers" — by which they mean people directly connected with the techinical side of their products. Their dedication to quality is legendary. Stealth Mission ran almost a year and half over its planned production schedule. "To get us the last 3%," says Stu Moment. Though he admits, "That probably didn't buy us any sales..." JET on the Amiga ran 9 months. "We don't have to worry. Our products have a long life..."

That level of ambition to replicate reality and extend it "To digitize the world" — undoubtedly has earned Sublogic a great and growing number of fanatical followers worldwide. While CCI was at Sublogic's headquarters a call came in to Bruce Artwick from a German enthusiast who, having clocked up over one hundred hours on the recently released 3.0 version of Flight Simulator, discussed for nearly half an hour technical points with its creator.

The German fan was typical of Sublogic's audience which, already buying FS and the scenery disks, are very probably going to want to try other Sublogic products, especially if they are made more easily available and at a lower price than hitherto. That is certainly the intention of both Sublogic — who have opened a distribution facility of their own near Manchester, Englaqnd and also U.S. Gold who want to bring their marketing muscle to bear on products that certainly fit in with the current trend toward more complex and challenging products that cassette-based arcade-style clones.

One of the most extraordinary achievements in the comparatively short history of home computer entertainment is the growth and success of Sublogic deriving largely from a single program — Flight Simulator. That one product headed the Charts for literally years, spending so long as a top seller — something over 250 weeks — that even Sublogic seems now to have lost count. It is probably still in the top ten selling programs in the U.S. and with the new 3.0 version out looks likely to remain there, possibly indefinitely.

For Sublogic exact, accurate, absolute detail is more than a concern, it is an obsession. For Sublogic — Flight Simulator fans that total dedication is probably what has given the products all the quality that has made them equally obsessive players. With that intensity of interest on both sides, you could see Sublogic's name up there in the charts for another 250 weeks. Like to fly down the Amazon to the fast disappearing rain forests? Try Scenery Disks 25 or 26....

Sublogic's leading programming experts

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EXPENDITURE ANALYSIS

Peter McDonald put on his mettle by a U.S. magazine helps you find out if you are the last of the big spenders

"Beachcomber" once said in his *Daily Express* column that when critics write "Not for the squeamish" they mean "Will be enjoyed by the filthy-minded". Like my *Timetable* (CCI; October, 1988) this offering is not for the experts (unless they are after a little amusement). Like the earlier program, this is really a skeleton. It does have a function. But it needs adapting and "enfleshing". It is written for the 128 but apart from a few SLEEPs, and a GETKEY, I do not think there is much which would need altering to make it suitable for the 64.

First, what does it do?

Its purpose is to analyse monthly expenditure. So it starts by asking you your monthly income; then it asks you to enter the totals spent during the month under various headings. It then tells you the balance left after the expenditure, the proportion of your expenditure attributable to each category and the proportion of your income used for expenses. With any luck it might show you if the money spent on one category is excessive in relation to the whole.

Let us imagine (to keep it simple) that you have a monthly income of £800. You spend £80 on mortgate; £60 on food; £20 on rates and £40 on sundries. The program will tell you that your expenses total £200, leaving £600; that 40% of your expenditure goes on your mortgage, 30% on food, 10% on rates and 20% on sundries; and that your expenses absorb 25% of your income. (The last of the big spenders; that's you!)

Now with only four categories, and figures as neat and tidy as that, you would not need an expenses analyser. But I have restricted the program to four categories to keep the listing reasonably short; however, as we shall see, the list of categories can be extended.

The program is flexible in that you yourself can pick whatever categories you wish, provided the title in each case does not exceed 16 letters. I decided against clearing the screen after each category total has been entered. But when all the data has been entered (LINE 500) the screen is cleared.

If you decide to answer "Y" when you are asked if you want to repeat the program (LINE 630), the program goes to LINE 5 and starts again. Otherwise it proceeds to LINE 640 and ends.

This program uses GOSUBS extensively so that it confines itself to less than 40 lines in all . . . not a terrific task to type out.

Let us look at LINE 10 and GOSUB 3010 for a moment.

The GOSUB provides that the variable A$ is to be printed on screen, and TAB(22) tells us where. But what *is* A$. It in fact varies as we proceed through the program. The thing to grasp, however, is that GOSUB 3010 tells the computer to print A$ (whatever that happens to be at the time) 22 spaces from the margin, and then to follow this with an INPUT. The information you INPUT will be known as "X". The RGHT signs on LINE 3010 are there to make the INPUT question-mark come under the first character on the line immediately preceding it on screen.

LINE 10 tells us that A$ is the legend: "AMOUNT OF MONTHLY INCOME IN £'S". The answer to the INPUT (e.g. £800 in the example given above) is assigned the variable "X" in LINE 3010. LINE 20 says that IN=X. IN is an abbreviation for INCOME. You will meet it again, later in the program (e.g. in LINE 520, where the expenses are expressed as a fraction of the income).

LINE 30's GOSUB directs us to LINE 2500. This defines A$ as "NAME OF EXPENSE CATEGORY" and (LINE 2510) tells the computer to PRINT it on the screen 22 spaces in, and to follow it with an INPUT, which this time requires the title of this category (e.g. "MORTGAGE") to be entered. The category title has the variable X$ assigned to it. For the purpose of that GOSUB, every such title will be "X$", and it will, always PRINT on the screen the latest word entered in response to the INPUT. But one of the things the program has to do, eventually, is to recall the name of each category so that it can be printed on screen when it is desired to show the proportion of the total expenses attributable to each category.

So when the program RETURNS from GOSUB 2500 to LINE 30, the computer is told to note that C1$ = X$. If, therefore, X$ is "MORTGAGE" on the first occasion when you use GOSUB 2500, C1$ will be noted as meaning "MORTGAGE".

LINE 40 sends you into GOSUB 3000. That GOSUB redefines A$, this time as the legend "AMOUNT SPENT IN THIS CATEGORY = £". LINE 3010 (as we have already seen above) tells the computer where to place A$ on the screen, and it is followed by an INPUT which requires the appropriate sum to be entered. When it is entered, it has the variable "X" assigned to it. The program then RETURNS to LINE 40, where the computer is told that X1 = X. So whatever sum has been entered is identified henceforth (e.g. in LINE 510) as X1.

What we have seen happen so far is repeated three times more, between LINE 50 and LINE 130. Because the two GOSUBS are used each time, we end up with four categories of expense, to which the variables C1$, C2$, C3$ and C4$ have been assigned, and we have INPUT the figure in respect of each of these items, the variables X1, X2, X3 and X4 being assigned to these.

LINE 510 defines "E" (short for EXPENSES) as the sum of X1, X2, X3 and X4. (In fact it allows for the addition of six more categories, because it treats E as the sum of X5, X6, X7, X8, X9 and X0 as well as X1, X2, X3 and X4. As the six extra categories have not been defined in the program, they will be treated as "NIL" items and will not affect the total. The first three of these extra lines, for instance, would read:

```
140 PRINT
150 GOSUB 2500: C5$=X$
160 GOSUB 3000: X5=X
```

The principle should be fairly clear.)

Having defined "E" as the sum of X1, X2 etc. the program (LINE 520) says that EP=E/IN. "EP" stands for "EXPENSES PROPORTION", which is found by dividing the total expenses (E) by the monthly income (IN). Applying this to the figures given in our example, EP would equal (80 +60 +20 +40) divided by 800, that is to say 200/800 which equals 0.25.

LINES 530-550 use a new GOSUB (4000). This tells the computer to print A$

cont. on next page

followed by B. LINE 530 defines A$ as the legend "MONTHLY INCOME" and B as "IN" (i.e. the monthly income figure). LINE 540 defines them as "TOTAL EXPENSES" and E (i.e. the sum of the expenses) respectively; LINE 550 as "BALANCE EQUALS" and income minus expenses, respectively.

LINES 570-600 use GOSUB 4010 which tells the computer to print A$ on the screen, followed by the words referring to B% of the total. A$ is defined by the LINES as C1$, C2$ etc. (the names of the categories of expenses) and B is the relationship (expressed as a percentage) which the expenses in that category bear towards the total expenses. LINES 610-620 also use GOSUB 4010 and tell you what proportion of your total income has been used to meet expenses.

LINE 630 gives you the option of starting the program again at LINE 5.

LINE 640 contains END. That line is only activated if the answer to the question on the preceding line is not "Y". It then stops everything at that point. Without the "END", the program would run on and come to (and execute) LINE 2500 and the GOSUBS.

The beginner may be interested in the formula I have used (e.g. in LINE 570). It is typified by

B=INT((X1/E)* 10000)/100

in that LINE.

This is an example of the INTEGER function (see Section 4-20 in the 128D System Guide, for instance) which is used to round off a number to the nearest integer. If, in the line given above, X1 was £189, and E was £807, then X1 divided by E would be approximately 0.234200743. But we do not really want percentages expressed to more than two places of decimals, i.e. 23.42% in the present case.

Well, to find the percentage in the normal manner, you would divide the category sum (189) by the total expenses (807) to give 0.234200743 (see above). Then you would multiply it by 100 to convert it into a percentage, i.e. 23.4200743%. But if you apply the INT function to that, it will give you 23%, whereas you want it to be correct to two decimal places, i.e. 23.42%.

The answer is to multiply the original answer (0.234200743) by 10,000 to give 2342.00743. You then apply the INTEGER function to that figure (which chops it down to 2342 in our example). But in multiplying by 10,000, you multiplied it by 100 × 100 instead of by 100. So you now need to rectify things by dividing it by 100, to give the percentage. 2342 divided by 100 is, of course, 23.42, which is what it should be. In short, to preserve two places of decimals, you multiply by 100 times more than you need, then apply the INTEGER function to round off that figure, and then divide your rounded-off figure by 100.

I wonder if any readers have started to use the GOTO 999 routine I mentioned in "Timetable". That LINE, of course, contained a SAVE-AND-REPLACE command, which could be operated at any time whilst you were programming. All you had to do was to type "GOTO 999". Provided, you have already saved the program under the title "EX/AN/128" (in this case), LINE 999, when initiated by the GOTO, will save-and-replace the program at any point. A useful facility if you are likely to be interrupted whilst working on the program. I have used it for a couple of years. But recently an American magazine printed a short program which you loaded into the computer before programming; it enabled you to do a SAVE-AND-REPLACE with two key-strokes ... six less than GOTO 999! That put me on my mettle and produced LINES 0-5 in the present program.

Whilst running normally, the GOTO in LINE 0 makes the computer leap-frong over LINES 1 and 2. LINE 1, however, contains the SAVE-AND-REPLACE command. So if at any stage you type RUN 1 (four key-strokes because you can miss out the space) the save-and-replace will be executed and the END on that line will prevent the program running any further. But do not use it until you have saved the program once in the normal way.

P.M.

```
READY.

0 GOTO 5
1 DSAVE"@EX/AN/128":END
2 REM EXPENDITURE ANALYSIS ("EX/AN")--PETER MCDONALD-1988
5 PRINT"(CLR)"
10 A$="AMOUNT OF MONTHLY INCOME IN £'S":GOSUB 3010
20 PRINT:IN=X
30 GOSUB 2500:C1$=X$
40 GOSUB 3000:X1=X
50 PRINT
60 GOSUB 2500:C2$=X$
70 GOSUB 3000:X2=X
80 PRINT
90 GOSUB 2500:C3$=X$
100 GOSUB 3000:X3=X
110 PRINT
120 GOSUB 2500:C4$=X$
130 GOSUB 3000:X4=X
500 PRINT"(CLR)"
510 E=X1+X2+X3+X4+X5+X6+X7+X8+X9+X0
520 EP=E/IN
530 A$="MONTHLY INCOME:£":B=IN:GOSUB4000:SLEEP 1
540 A$="TOTAL EXPENSES:£":B=E:GOSUB 4000:SLEEP 1
550 A$="BALANCE EQUALS:£":B=INT((IN-E)*100)/100:GOSUB4000:PRINT:SLEEP 1
560 PRINTTAB(22)"THE PROPORTION OF YOUR EXPENSES IS AS FOLLOWS:"
570 A$=C1$:B=INT((X1/E)*10000)/100:GOSUB4010
580 A$=C2$:B=INT((X2/E)*10000)/100:GOSUB4010
590 A$=C3$:B=INT((X3/E)*10000)/100:GOSUB4010
600 A$=C4$:B=INT((X4/E)*10000)/100:GOSUB4010
610 PRINT:PRINT:PRINT TAB(22)"PROPORTION OF INCOME"
620 A$="USED FOR EXPENSES":B=INT(EP*10000)/100:GOSUB4010
630 PRINT:PRINT TAB(22)"REPEAT? (Y OR N)":GETKEY X$:IF X$="Y" THEN 5
640 PRINT"(CLR)":END
2500 A$="NAME OF EXPENSE CATEGORY (DOWN)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEF
T)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)(LEFT)
(LEFT)(LEFT)(16 LETTERS ONLY)"
2510 PRINT TAB(22)A$:INPUT"(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT
)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)"
;X$:RETURN
3000 PRINT:A$="AMOUNT SPENT IN THIS CATEGORY= £"
3010 PRINT TAB(22)A$:INPUT"(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT
)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)(RGHT)"
;X
3020 RETURN
4000 PRINT TAB(22)A$;B:SLEEP 1:RETURN
4010 PRINT TAB(22)A$;TAB(39)" ="B"% OF TOTAL"
4020 SLEEP 1:RETURN

READY.
```

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RAP4
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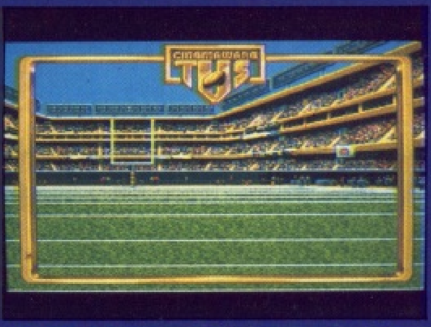
Cinemaware

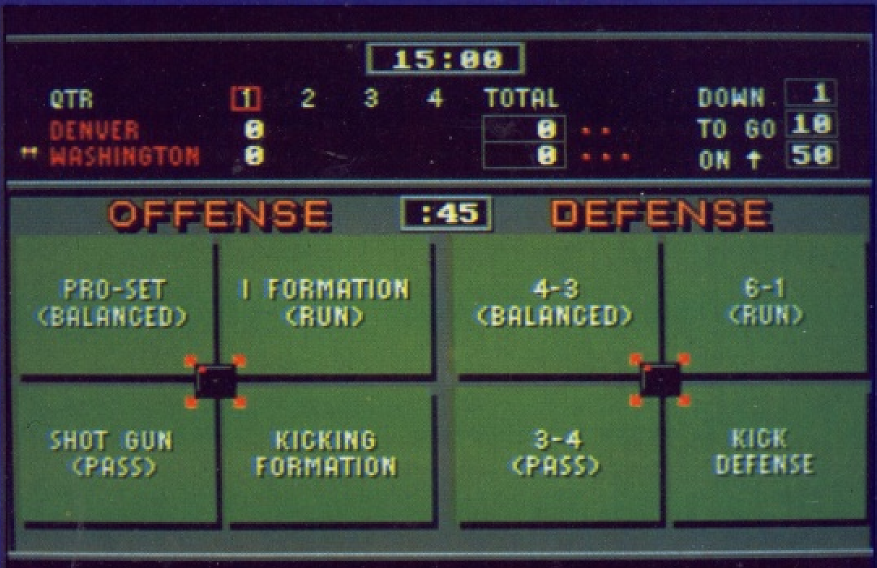
Andy Moss finds the Star of Cinemaware planning some very big small screen productions

It really does not seem like 12 months since I last interviewed big Bob Jacobs, the bouncing boss of Cinemaware, maybe because I am still nursing the bruises from his vice-like handshake. But there is no denying the fact, that the House that brought us **DEFENDER OF THE CROWN, SINBAD AND KING OF CHICAGO** is still very much alive and well and planning even more seemingly impossible graphical masterpieces. With the imminent release of **ROCKET RANGER**, which incidentally Bob reckons to be their greatest effort to date (he says that about all their games) it seemed like the perfect time to get together again and see just how far Cinemaware has come and what is in store for it in the future.

As always his wife and co-director Phylis is by his side, whom, Bob points out, is really the brains behind the whole business. "Phylis takes care of the financial aspects of the company, she's got a money mind anyhow and when we kicked-off, back in 86, working from our house she just got right on with the game plan for our growth." That left Bob clear to think about just what it was that was missing in the software entertainment business. "Our games are not just meant for the good players, anyone can load up Defender and just enjoy themselves, be entertained. They might not win but it doesn't matter, they'll have fun trying". That is the essence of all Cinemaware Product, giving as much entertainment value as possible within an exciting storyline. It really is more like going to the movies with each release. This last year has seen great expansion happening in the company, "At the time of last year's PCW show we had around 12 people on board and used a number of outside technicians to develop our games. This year we now total over 64 staff, and everything is done in-house. Rocket Ranger has been in development now for over 18 months and we have been involved at every stage."

Talking of Rocket Ranger starts Bob off into one of his "look how much data we have crammed into this" speeches. Suffice to say that RR contains around 1 megabyte of real digitised sound, another megabyte of action and a depth of game never before attained. "The strategy needed to win out in the game changes each time you play it as we have incorporated various different ways for the Nazis to go about their business of world domination, you need to find out which one it is before you can form a strategy that wil work." The Nazis mentioned, are in fact the World War Two type, who by their use of Lunarium, a substance from the moon, which they mine to make deadly bombs, are bound to win the War. As RR you put on your Rocket Suit, grab your ray gun and try to steal parts of a rocket ship, hidden in different countries, then head for the moon to destroy the Nazi base. In between all that are some action arcade sequences involving taking-out a huge Zeppelin, fighting hand-to-hand, shooting down fighter planes and ground combat.





15:00

QTR	1	2	3	4	TOTAL		
DENVER	0				0	DOWN	1
WASHINGTON	0				0	TO GO	10
						ON ↑	50

OFFENSE :45 DEFENSE

PRO-SET (BALANCED)
I FORMATION (RUN)
SHOT GUN (PASS)
KICKING FORMATION
4-3 (BALANCED)
6-1 (RUN)
3-4 (PASS)
KICK DEFENSE

> *"The Nazis mentioned, are in fact the World War Two type, who by their use of Lunarium, a substance from the moon, which they mine to make deadly bombs, are bound to win the War."*

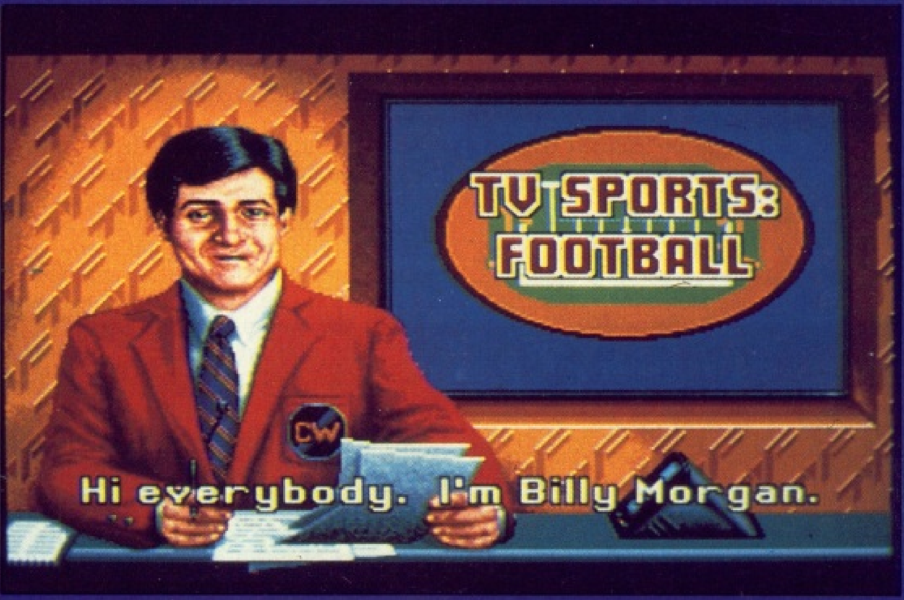
— Take 2
— Take 2

" There are 28000 xy coordinates on the three screen-wide map, fantastic music, five arcade elements and the game is five times deeper than Defender ever was. "

"The arcade games in RR actually have five levels each" said Bob "just because you knocked out the guy the first time around doesn't mean you get a Pushover the second or third time."

Selling the game in Germany would cause obvious problems so Bob rewrote it in 3 hours. "We couldn't release it in Germany in its present form as they are very touchy about the War so we came up with a completely new story based in the future about an alien takeover. What can I say, I did a complete rewrite and didn't mention 1940 once!"

TV FOOTBALL is a new venture for the Jacobs, and one which they intend to develop further. "We want to broaden out, and TV Football is intended as a serious American Football sim, but looking just like it is being presented through the medium of television. There is a full 28 team, 16 game schedule with fabulous on field graphics as well as cheerleaders, broadcasters, fans in the stands and a half time show complete with marching band." When I mentioned that in the UK we are sometimes confused by the many complex moves needed in a Ball game, Bob explained that in the manual, all the moves are described in detail, and you can even just call the plays and let the computer play out the game. As well as a two player option, there is a two players on the same side against the computer option which really is a first. "This game is so real it sweats! We have two more sports titles under way, and after that who knows maybe a soccer game?"



Hi everybody. I'm Billy Morgan.

CINEMAWARE
TVS
TODAY'S GAME
WASHINGTON
AT
DALLAS

I abruptly change the subject after all, would we honestly buy a soccer game designed by Americans? Moving on to the latest game under design LORDS OF THE RISING SUN, Bob goes off again on a number-crunching exercise, "LORDS is the biggest game ever done. There are 28000 xy coordinates on the three screen-wide map, fantastic music, five arcade elements and the game is five times deeper than Defender ever was." This will be a game set in medieval Japan with you commanding vast armies of Samurai warriors in an attempt to become Shogun, by defeating all your enemies. Like Defender of the Crown but much much bigger and prettier if that is possible.

What about next year, well Bob is reluctant to let any cats out of the bag, except to say that there will be three more Cinemaware products, of which one will feature a gun fight . . ." Hmmmm sounds like a western to me" I say, "Exactly" says Bob "no one has really done a great Western picture before . . ." I seem to remember John Wayne did one or two, and then there was Audie Murphy. "This one will have 200000000 megabytes of sound mixed with over 250000 separate bytes of animated action and . . ." That was it, enough time. It is going to be a busy year for Bob Jacobs, Disney have expressed interest in doing an interactive VCR featuring Mickey Mouse and DD using a black box fixed to the video machine, and with all these new titles on the drawing board, will he get it all done in time for next year's interview? I hope so.

A.M.

BUMPER STICKER MAKER

Seen on the back of a car recently:

"When God made man ... she was only joking!"

Yeah! I know, it's only a laugh – but it's a car sticker that makes an impact. Have you ever fancied designing your own witty (?) Car Stickers?

You know the sort of thing: "MY OTHER CAR IS A PORSCHE" and "WHEN I GROW UP I WANT TO BE A ROLLS ROYCE" etc.

Well, hot-foot from the good old US of A comes an interesting utility called BUMPER STICKER MAKER, from Intracorp Inc, which will allow you to "design and create your own bumper stickers and instantly print them on custom bumper sticker stock supplied with the program", unquote!

Briefly, Bumper Sticker Maker is a DISK ONLY utility that will let you place Icons and Text on screen and then print them out in the form of a 'bumper sticker'.

The program is split into two main parts, "The Sticker Maker" and "The Icon Editor".

In both parts, all the functions are accessed by a very agreeable drop-down menu system. A nice touch here, the program may be controlled by either keyboard or joystick but you can also select a menu by typing the 'Commodore Key' then the first letter of the menu. Selections can then be made from the menu by using either the joystick or cursor keys.

At the main screen, your options are: STICKERS, FONTS, ICONS, DISK and EXIT.

The 'Stickers' option allows you to load and save your works of art and lets you print them out.

The 'Disk' option is a straight forward DOS, giving you access to the disk commands and allowing you to delete Stickers and Icons from your disk. You will need to use this to delete files, as they are saved in USR format.

'Exit' takes you back to Basic.

The real power of the program is in the 'Font' and 'Icon' menus. The 'Font' menu lets you load a font and then adjust its width and height, allows you to underline or reverse it and decide whether you want to overwrite or replace what is on screen.

There is a good selection of fonts supplied on the disk, ranging from '(Old) English' to 'Computer', twenty-two in all!

A good point here is that the word 'SAMPLE' is displayed on the menu, in the font and style that you've selected. This lets you see exactly what the text will look like before you start placing it.

To place text on the screen, simply select 'Enter Text', place the cursor and start typing!

I've left the 'Icon' menu to last as this option not only lets you 'new' the screen to start again and loads Icons to be placed onto the screen, but also takes you into the 'Icon Editor'.

The first of these is quite obvious, it clears the workspace. The second lets you load any of the supplied Icons (twenty-nine, ranging from balloons to a rocket!) and place them into your design.

Selecting 'Icon Maker' loads a separate program from disk and takes you into a fairly simple graphics routine that allows you to load/save, create/edit any Icon.

The main menu selections are selected in the same way as the main program and are: ICONS, SHAPES, TOOLKIT and RETURN.

Simplest first, 'Return' takes you back to the main program!!

'Icons' lets you clear the workspace and load and save your Icons. An interesting point here is that the program will also load 'PRINT-SHOP' icons from either side A or side B of the Print-Shop disk.

Selecting 'Shapes' allows you to draw lines, boxes, circles, free-hand or a shape with any number of sides from three (triangle) to THREE HUNDRED AND SIXTY! (I wonder what one of those is called!!).

Opening up the 'Toolkit' lets you "save" the current icon to RAM or "restore" a previously "saved" icon from RAM. The toolkit also contains a 'fill' routine.

And that my friends is 'Bumper Sticker Maker'.

But is it any good?

The program is certainly VERY easy to use and simple to master. It took me less than an hour from booting the disk to produce the examle(s) shown here.

The menu system works well although I found the placing of one or two of the options rather strange. For example to clear a 'STICKER' that you are working on, you have to select the 'ICON' menu.

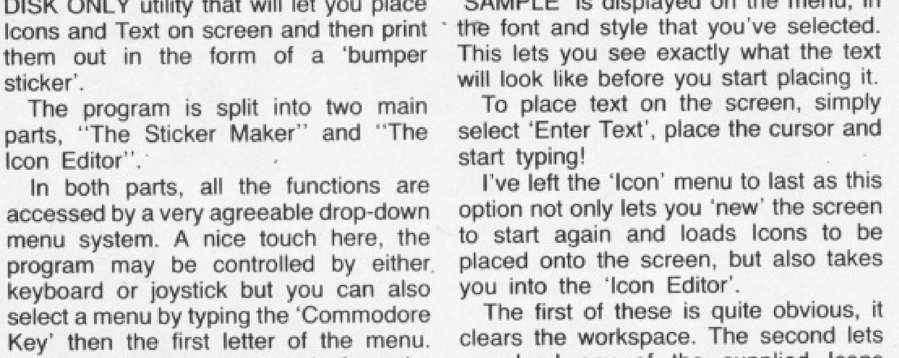
A range of printers is catered for, all via the serial bus as device 4 printer selection is achieved by running a separate 'Printer Setup' program before you use the program for the first time.

The stickers produced are really quite good. As the manual points out, 'the better the printer, the better the sticker'. The stickers are approximately 8"×3" and there are a few supplied with the program to get you started. They are the 'peel-off' kind and sould be available from any good computer supplies shop. I think it would make a nice addition to anyones' software collection.

Remember, of course, that you don't HAVE to put the stickers on your family's brand-new car! You could always use them as signs or print your creation at the top of a letter. Use your imagination.

NS

Price: £24.95
Contact: Financial Systems Software, 0366 553153.


COMMODORE COMPUTING INT.
0 1234.
THE BIGGEST AND THE BEST!!

RAP4

Andy takes a look at an interesting new interface

Electronics found its way into the music world very early on, in fact without the electronic amplifier, there would be no "pop" music at all. In the early days the amplifiers were valve based, and very large and heavy. Various faults developed from time to time, and the output of the amplifier was distorted in various ways, sometimes the distortion appeared to enhance the mood of the music. When semiconductor amplifiers came into use, so did many special effects such as fuzz boxes, wah-wah pedals and reverb units of all shapes and sizes. Perhaps the most important was the electronic keyboard, this was a lightweight unit, that was a simple organ type instrument, but it was very portable and also very cheap compared with the real thing. Various enhancements to the keyboard were made over the years and it developed into a very complex instrument indeed, but with the advent of the microprocessor the changes that this was to bring about has led to a whole new type of instrument.

Every single instrument has its own unique sound, BUT that sound can always be described as a complex frequency waveform and a characteristic waveform envelope. The waveform synthesizer allows the user to duplicate the waveform and envelope of just about any type of instrument, and of course allows the user to define any other waveform that he wants to. Defining waveforms was a very tedious process, so it follows that some means of directly feeding the sound of another instrument into the synthesizer was needed. As by this time the synthesizers were all digital, a means of converting the sound into a stream of digits is called an Analogue to Digital converter, couple that with a micro for control and you get what is commonly known as a sound sampler.

RAP4 is a software sound digitizer that can also be used to pick out various parts and modify them in various ways. This program is for the +4 machine and can be supplied for tape or disk use. There are a couple of versions of the program available, Tape, Disk and Deluxe, the Deluxe version requires a separate interface known as the TTL4. The review copy was a standard disk version.

The whole idea is to get sounds into the +4 and the method that RAP4 uses is via the cassette port. You simply pop a cassette with the sound into the deck and tell RAP4 to load it in. Once the sound is loaded into memory you can then use RAP4 to edit and modify the sounds.

The RAP4 user interface is very friendly and easy to use, and it is based on a standard WIMP type system. Any input device connected to port 1 can be used, provided that it looks like a joystick, or you can use the cursor pad to move the pointer about the screen.

RAP4 is VERY comprehensive and is a little daunting to the user the first time that it is used, but the documentation is excellent and has been produced in a very easy to read style that tells the user step by step what each function does and how. The various menu screens are reproduced in the manual making everything crystal clear, and there is a very good index included as well as quick reference guides, it makes a nice change to find that the documentation has had as much time spent on it as has the software, and the documentation reflects the time spent on it.

The main functions of RAP4 are:

Pointer speed setting,

Storage screen,
tape/disk melody, sample and synth load/save and a button that will display the disk directory.

Abort screen . . . quits RAP4

Monitor Screen,
allows you to hear the tape played through the system, so that you can position the tape at the start of the sound that you want to sample.

Sampler screen,
This is the business end of the sampler system, with this screen you can define the record and replay speeds, and of course the loading of the sound from the tape. You have a playback function as well, so that you can check that you have captured the correct sound. RAP4 only takes in about 10 secs of tape at one time.

Reverse Screen,
This is the first of the sound modification screens, allowing you to reverse the order of the sample in the store. Very much like playing the sound backwards.

Setup screen,
This defines the start and end addresses of each of the samples and allows you to specify a name for each sample.

Erase screen,
Very simple this screen, it just erases the specified sample from memory.

Editor screen,
This is the main screen of RAP4, without it just about all of the other RAP4 functions are useless. You can change any byte in the sample, define the start and end of the sample. There is a graphical representation of each byte of the waveform, and you can scroll a small window through the entire sample. You also have a play function, this will play the waveform between the start and end markers.

Notes screen,
a much simpler screen this one, it just sets up the notes of the synthesizer, you can also play the note currently being defined so you can test things out as you go along.

Drums screen,
Just like the notes screen, but the sounds are applied to a drum set. This works best on short samples/sounds.

Synthesizer screen,
This is the control panel for the synthesizer function.

Drumkit screen,
The control panel for the drums function.

Sequencer screen,
combines the synthesizer and drumkit into one combined effort.

Clear screen,
very simple, this will clear the memory, so use with care!

Most of the screens have many functions and in general they are very easy to use. So how does it work in practice? As the standard version uses the cassette port, and the cassette that Commodore use is a digital system rather than a standard audio cassette, the quality suffers very badly. It is understandable why there is a separate interface available. I would hope that it would improve the sound greatly.

Getting the sounds into the memory is no trouble at all, click onto the setup screen and decide on what sample you are going

cont. on next page

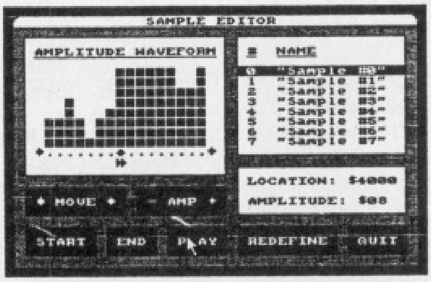
RAP4

to load in, the program can keep track of eight samples. The allocate however much of the remaining 48K of memory to the sample as you want to. Quit the setup screen and click on the sampler screen, put the tape into the cassette, click on record, press play and wait ten secs. That's all, the sound is in memory.

The next stage is to edit the sound and do something with it. So you enter the editor. The waveform display is very nice, but it is small, and scrolling through the entire sample is very tedious. Defining the start and end points is very easy, but it is also very frustrating as well, once you have set them up there seems to be no way of modifying them. You have to go to the sample setup screen to reset the pointers. This results in a lot of unnecessary pointer work, and the WIMP operating system falls down badly for this sort of problem.

To edit the waveform, you can set the current byte (centre of the waveform display) to any amplitude thus setting its shape. This is a one byte at a time job and can also be tedious. This is what WIMP is all about, a crude sketch function on the waveform display would have been so much better. The synthesizer is quite interesting, as the captured waveform is played rather than a pure note. You can also define the overall pitch of each "key" and thus modify the pitch of the waveform. However the synthesizer only has eight notes, but each note can play a different sample, so you could have eight totally different instruments all rolled into one!

The drumkit is by no means the best, but it is very, very dependent on the waveform that it is given to work with, you can also define what sample and also the frequency of each of the eight drums. Both the drums and the synthesizer are played with the keyboard.



Once you have sorted out the samples and the instruments, you will want to put them together into some sort of composition, it is here that the sequencer is used. A rather course stave is displayed, and as you enter the notes they are placed onto the stave, as are the drums. You simply build up your tune like this, play it, and edit it until it is perfect. It is a bit of a mouthful to explain, but it is really a program that is used rather than explained.

My overall impression of the sampler is very good, with a few reservations on the WIMP system and how it is used. I did get annoyed at it a few times when I tried to do things quickly. The quality would not please any musician, but the effects generated would send any budding radiophonic workshop freak delirious with delight.

And there's more . . .

RAP4 Basic, is a basic extension that allows you to load and play any of the sounds that you have created with the RAP4 editor, and so use them in your own programs. In all there are five primary commands, Load, Sound, Default, List and Help with quite a few sub-commands as well. This proved very easy to use, but like most things some practice is needed to get the hang of it.

RAP4 is one of the most comprehensive sound effects programs that I have seen for an 8 bit machine. It will not suit the musician looking for digital quality, but for creating sound effects, it would be hard to beat. A very impressive feat of programming by the authors, that has had more thought put into it than most other programs of any sort.

Price: £7.95 (C), £9.95 (D), Deluxe edition, disk only £14.95. Contact Intellect Software, 17 Collingwood Road, Bristol BS6 6PD.

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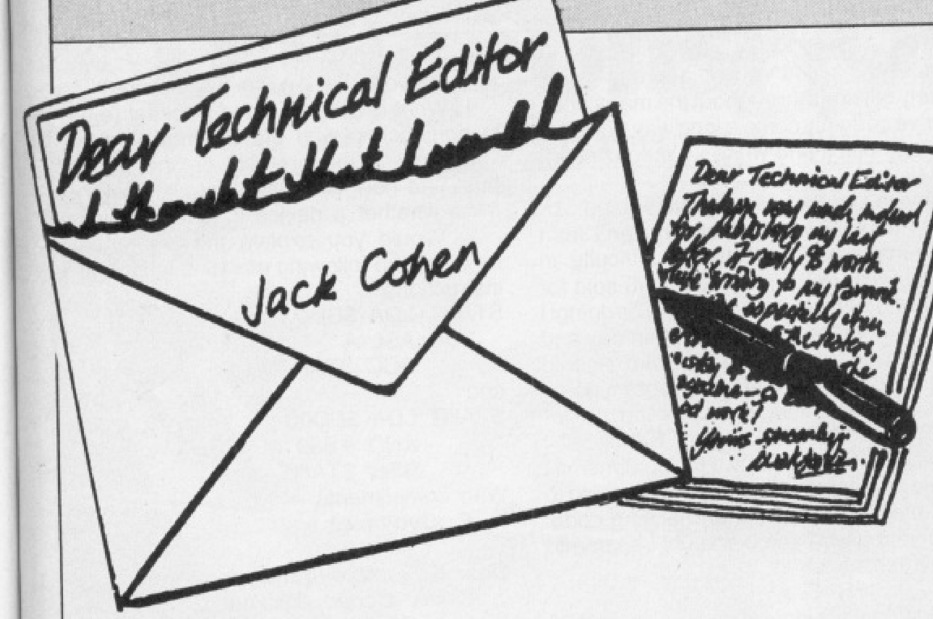


Dear Sir,
I purchased a Star LC-10C, colour printer. They are good printers.

I have had this printer for just over a month or more, and a yet have only managed to print in black. The printer will print in colour, but how one can do it gets me. It's alright dishing out manuals, but how can a so-called layman like myself understand all this technical stuff.

Could someone just tell me how to get colour without putting the commands in basic?

I am using the Mini Office II at the moment, but if I try to put the commands in <27><114> <n> the word processor will print what I have written.

Couldn't someone just say you do this and that and that is all there is to it without going into all this stuff I just don't understand? All I want is to write words in any colour I desire. I understood I could buy a colour printer and print colours. It seems this is not the case. One needs to go to night school to learn how to write in colour. I most certainly wouldn't have bought a colour printer had I known the hours I have spent trying to work the thing, I should have had second thoughts about buying a colour printer. It is all so complicated. Manuals don't always read true either. I have spent hours trying to type out a program, then syntax error crops up. Rectify that and it points out another mistake.

My wife says she is a Computer Widow. I think she will be if I don't crack the art of this printer. Anybody know a simple way to put the commands in to get colour? Or tell me in simple language how to do it.
Yours, baffled
P. Wilson

Dear P. Wilson
First check if your printer is supported by your version of Mini Office II. Use the graphics module and select 'Hardware options' from the Main Graphics menu. This will take you to a sub-menu where printer type and colours for the graphics displays can be chosen.

The printer should be set up as a normal Commodore (auto line feed enabled). Assuming this works and prints in colour have you used the word processor format command syntax of CC27,114,n to obtain colour?

Change colours by repeating this command for different values.

Dear Technical Editor,
I have owned a +4 for nearly three years, and I must admit I have used it mainly for games.

Recently, I started a subscription to your magazine and programmed in the '3D Plotter' by William Sellers from the September issue.

After rectifying a few mistakes I can't work out how to use it! Every time I put a function in, the program disappears leaving two mixed up lines. (Luckily I had saved it.)

Please could you send instructions. Getting back to the computer, I now want a printer. Do you know of a printer that is good but fairly cheap? Or is there one that goes with the +4? Would I need an interface? In which case which one?

I enclose a s.a.e. for your reply to my questions so I would be grateful for your answers.

Finally, are there any Role Plays out on tape for the +4? I have read about them in the magazine and really want to get into them.
Yours faithfully
N Bone
P.S. Do you know where I could get a copy of 'Rambo' on tape.

Dear N. Bone
The program places the machine code routine in place of the star (*)'s in line 20.

The REM tells the basic interpreter to ignore any characters that follow until a new line is reached. (Not even a termination by a colon (:) is allowed.) This is why you can insert machine code routines in this way.

Your problem is probably caused as follows:

An editable line in basic contains a maximum of 80 characters, although more characters can be added but not edited.

This is because certain characters and combinations can be represented by tokenised keywords (eg PRINT by '?').

Line 20 contains '20' a space a REM and 75 stars making 81 characters.

The line can only be entered by omitting the space.

The cursor will finish on the line below so you will need to do a cursor up to line 20 and then hit RETURN.

When listed the space between 20 and REM reappears (after all its only for appearance). The last star will appear on the next line and the important thing to remember is DO NOT EDIT THIS LINE.

If you do the last star will vanish and the program will not work since part of the machine code will not be accessible and will corrupt the following line. Save the program before RUNning it.

Any of the Commodore serial printers will work with the PLUS 4 without needing another interface.

Other printers will work with a suitable interface.

For example I use a STAR SG10C with my plus4 but any EPSON compatible printer can usually be supplied with an appropriate interface built in.

For your Role Playing info why not try our companion publication 'GM' which is the Independent Fantasy Roleplaying Magazine. The first issue was SEPT 1988 and ring us on 01-278-0333 if you would like to subscribe.

You may well find the game you mention amongst the advertisements.

Dear Technical Editor,
Re your advert in C.C.I. this month.

Can you tell me if this program is compatible with the Commodore MPS-1000 printer?

The reason I ask is that I have bought programs only to find out that they do not drive the MPS1000, notably the Mini-Office 2 which was an expensive buy.
S.E.A.
Yours sincerely
W. Gamble

Dear W. Gamble
The MPS 1000 has been out for over two years and therefore it should be supported by 'Newsroom'.

Do you have an early version of MINI OFFICE II? This is because software producers cannot provide for a printer that does not exist when they finish their programs.

You can find out if there is a later version than the one you have by contacting the suppliers, Database Software of Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

They may upgrade your software for a nominal amount.

Dear Technical Editor,

I have had my Commodore 128 for a couple of years now, without any problems. Today when I switched on the computer I found that most programs would not load correctly and gave errors if they were tried to run. On investigation I found that Bank 0 (RAM) if filled with zeros that memory addresses ending in D88 or F88, bit 1 would always be set i.e. OD88, OF88, ID88, IF88, etc. had the value of 02. RAM Bank 1 appears to be alright. Please could you point me in the right direction as to repairing the fault?

Yours faithfully

Paul Hooper

Dear Paul Hooper,

Contact DB Electronics of Chelmsford on 0245-260874 who are most helpful and offer a repair service for most Commodore machines and printers. Your fault appears to be chip failure.

Dear Technical Editor,

I am presently doing a G.C.S.E. Technology course, involving one major project. As this project will count towards approximately 20% of the final mark I thought that I should ask you for help.

For my project, I am aiming to link all the electrical, plugged, appliances, in my bedroom to my CBM 64.

In order to do this I need some form of interface (I think!). What I need to know is this: What sort of interface do I need? Where can I get one? How do they work? Who else, if anyone, can give me any more relevant information please?

Any help will be gratefully appreciated. You could be the first computer magazine to be mentioned in an exam project!

Yours faithfully,

Mark Wilson (15 yrs)

Dear Mark Wilson,

You need a package like Robotek 64 which is available from Datel Electronics of Fenton, Stoke-on-Trent on 0782-273815.

This is a comprehensive hardware/software package which the suppliers claim will enable you to connect your 64/128 to other appliances. The interface is part of the package.

Dear Technical Editor,

Firstly, I would like to congratulate you on a great magazine. Whatever anybody else says, I think you've got a pretty good variety of things throughout the magazine. You've certainly come a long way from the 50 page black and white £1 magazine of 1984!

Anyway, to the point, I have a good old 1520 printer/plotter which I haven't (as I remember having extreme difficulty in persuading my parents to buy it) sold for £25 as everybody else seems to be doing! I dug it out of the drawer the other day and thought about the odd program I could write to utilise it. I had one program going (which I may, incidentally, send off for printing in CCI one day) in Basic, but I found it extremely slow. Having done all I could about the program itself, I decided to set about translation into machine code. Everything was going fine until I came to statements such as . . .

'PRINT #1, "D", X, Y'.

How on earth do you persuade the 1520 to do drawing operations from machine code? I found through experimentation how to send characters, change pen colour and size of lettering. I even managed to get it to 'respond' to home commands and drawing commands but the plotter always assumed co-ordinates of (0, 0) whether I added a number to the code for a 'D' or whether I sent the numbers following the command. How do you send the co-ordinates? Are there two or more assigned locations in zero page? or is the operation simply impossible?

I hope you can help me, as I'd really like to know. Also if I can program the 1520 through machine code, perhaps I can get a few people interested in the little thing again!

Thank you,

Yours

William Greenleaf (14)

P.S. I do not have Rae West's book so I can't look it up in there!

Dear William Greenleaf,

Try placing the string in memory or use a suitable editor/assembler to enter. Your program will loop through this string and output to the serial bus all the data. It is possible that the quotes have to be sent to indicate that what follows are the co-ordinates.

Another possibility is that the routine is similar to PLOT where the A, X, Y registers are used.

X and Y being the coordinates so you could tray putting "D" in the accumulator 'A' and the coordinates in X and Y.

I have not managed to find anything to indicate the correct machine code syntax for the 1520 and, like you I have mislaid my 1520, so I am unable to experiment.

Perhaps one of our readers can help.

Dear Technical Editor,

I'm the proud owner of a C128, but I've encountered some questions to which I can find no answer, so could you please help me on the following questions?

1. What is Binary Coded Decimal (e.g. in conjunction with the Decimal flag)?
2. How is the protocol on the serial bus, and how does the controller determine whether a device is fast or slow?
3. Would you explain the difference between the following machine language instructions:

```
START LDA $DD00
      ASL A
      BCC START
```

and

```
START LDA $DD00
      AND #S80
      BEQ START
```

With compliments

K. E. Oyoygard

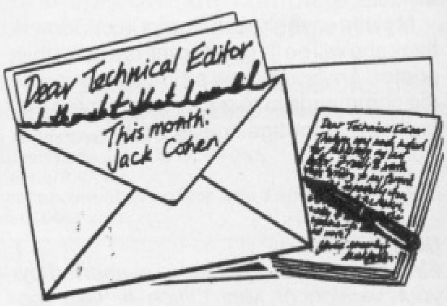
Dear K. E. Oyoygard,

1. Binary Coded Decimal (BCD) is a binary representation of the individual digits in a decimal number rather than the whole value of the number expressed to the base of two. For a full explanation of the differences between manipulation of numbers in binary and BCD get Lance Leventhal's book 'Programming the 6502' published by McGraw Hill ISBN 0-931988-27-6.

2. When addressing any device the C128 sends a fast byte, toggling the SRQ line eight times, with the ATN line low. If the device is a fast device then it will record that a fast controller has accessed it (a flag is set in the drive), and respond with a device request fast (DRF). This tells the C128 that the device can send and receive data in the fast mode. If the device is a slow one then no response is delivered (Timeout) and the C128 then uses slow mode.

Drive speed status is retained until the fastmode flag is reset by one of the following circumstances:
UNLISTEN, UNTALK, bus error and RUN/STOP RESTORE.

3. The first segment will execute until result of ASL A gives a number >= $80 that is the carryflag = 1. The second segment will execute until the contents of $dd00 (DATA PORT A – serial bus) are equal to $80, that is Zero flag = 1.



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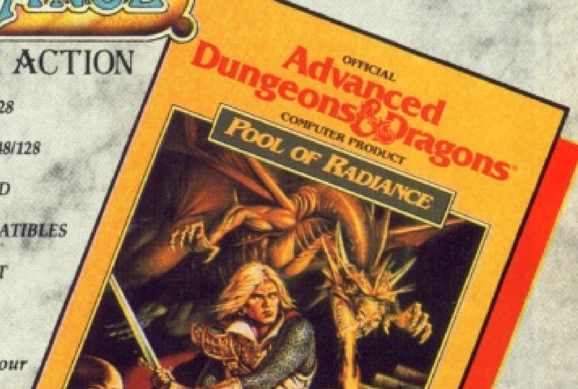
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POOL OF RADIANCE

FANTASY ROLE PLAYING

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BY ANDY MOSS

Adventure

COMMENT

Welcome back! Where have you been? This months batch of reviews is dominated by WASTELAND, a game so awesome in size that it has taken me over two months since I received it, to cover enough of it to review for you. Squeezed in between it I have also had a look at FOOTBALL FRENZY, a cheapie from Alternative, LA CRACKDOWN and THE QUEST FOR THE GOLDEN EGGCUP from Smart Egg (Rigels Revenge) Software. Before all this, I want to talk about F.I.S.T. the first play-by-telephone fantasy adventure system. For those of you who have not heart of this before, let me explain. FIST was conceived by Steve Jackson, who is better known for his Fighting Fantasy books. He has created a world where YOU are the master of your own destiny, by a clever bit of computer wizardry that links your telephone to a powerful mainframe computer running the FIST program. By dialling in you are automatically transported to Castle Mammon, a place of evil and the home of the Demon Prince. You start each adventure with a preset level of stamina which of course reduces as you take hits from your battles, however, the more you play, the better swordsman you could become as you learn how to defeat the different monsters you encounter. When you play FIST you actually hear sound effects, like creaking doors, manic laughing, the clash and swish of swords and the roars of monsters. The voice of the gamesmaster describes your surroundings for you, and at certain points you have to decide which direction or which action to take. It is at this point that the ingenious system comes alive, because if you want to go say East, you dial 1, or if you want to enter the witchs' hut dial 2 etc. Fighting is also controlled by dialling certain numbers for certain moves like a thrust or swipe. All essential requirements like inventory or money or health checks can be dialled up along with a LIMBO command that saves your characters' position for up to four weeks. I played FIST for over an hour, and found the whole process terrific fun, but....costly. You pay between 25 and 38p a minute depending on what time of the day you ring in so be warned, but if your wallet allows, you must try it. Just ring up on 0898 800 876 and see for yourself.

Before we embark on this months news, a word of thanks to three readers, Fiona Bissett, Rezas Clyro and Jonathan Dale, who have sent me in some great maps of Bards II, Alternate Reality and Starcross. Thanks a million, and Fiona, watch it! You only live around the corner to me so no more complaints.

ADVENTURE NEWS

This month there is a huge pile of stories on my news desk, mainly from two companies, Electronic Arts and and Mediagenic. Two publishers that are 100% committed to fantasy and adventure software in all its forms. Competitors please take note of the following...

NEW RELEASES FROM INTERPLAYER

Hot from finishing Wasteland, Interplay have announced that Neuromancer, a game based on the Cuberpunk novel by William Gibson is to be released in December, along with BATTLE CHESS, which uses 4 megabytes of amination and 400k of digitised sound. Battlechess brings the pieces of a chess board to life, each with its own personality and combat skills. There is an opening library of 30,000 moves and ten levels of play. Neuromancer is set in Japan in the 21st Century, and you play a futuristic hacker, hell bent on obtaining the best information and databases. Sounds like a modern day System 1500 to me.

ELECTRONIC ARTS GETS TWO BIG ROLE PLAYERS

Electronic Arts, still in a Japanese mood, have DEATHLORD set to go. Said to be one of the largest role players ever, it features 157 dungeon levels, 128 monsters and 16 separate continents to explore. Each continent has a different climate, terrain and weather conditions to combat and of course there are the mandatory spells to learn but this time there are over 88 to use. Interestingly, you can transfer your Bards, Ultima or Wizardry characters into Deathlord which should just be ready to come out now.

THE MARS SAGA is a sci fi role player which has you stranded on Mars after your ship has been destroyed. By becoming a bounty hunter you try to earn enough money to buy a ship and return home. The Mars Saga offers a logical menu driven command system that never interrupts play and an auto maping facility. Due out end of this month.

ZORK RETURNS TO INFOCOM MINUS ONE

Most people thought that ZORK was the beginning of the Infocom legend but not so. Zork Zero is a prequel to the famous Zork trilogy that tells the complete story of the last days of the Frobozz empire. Said to be the largest Infocom game to date, Zork Zero has over 200 locations and as many puzzles as all three Zorks combined! To top it off it also has, wait for it, gasp, grahpical puzzles! Here is your chance to learn what Dimwit Flathead's castle was really like, and how did the great underground empire collapse, where did Grues come from, and best of all, the true origin of the famous White House in Zork I. Out early 89.

MICROILLUSIONS JOIN IN THE ROLE PLAYING BAND WAGON

In good time honoured tradition Microillusions are entering the role playing arena with SHRINE OF THE DEMON SOUL. It will be a Gauntlet-type scrolling dungeon game with over 100 levels and dozens of monsters, treasure and spells.

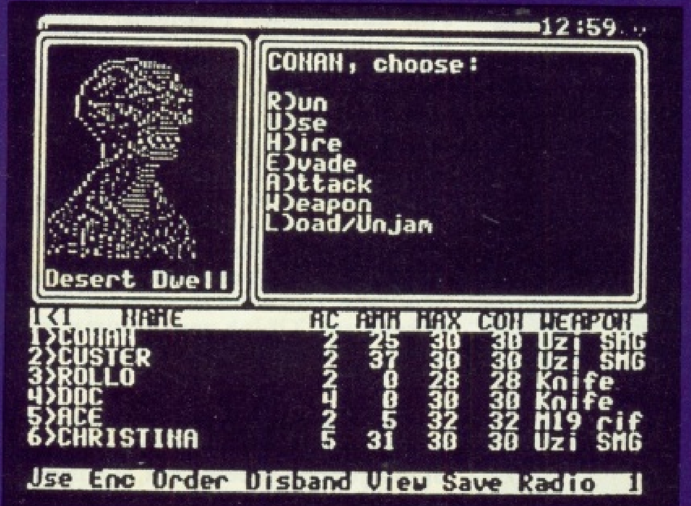
SEVEN CITIES AUTHOR COMES UP WITH MODEM WARS
Electronic Arts have signed up Ozark Softscope creators of Seven Cities of Gold to produce MODEM WARS, a game designed specifically for modems which allows 64 owners to play against IBM or APPLE owners, or just the computer. You can generate randomly millions of different battlefields full of hills, trees, rivers and plains. Yes sir, I want one now please.

CINEMAWARE NEWIES IMMINENT
Two new ones from my mate Bob Jacobs heralds Phase II in Cinemaware's lifestory. LORDS OF THE RISING SUN, is set in twelfth century Japan (not another one!) and casts you as the lead character in a race to become Shogun. Centrepiece of the game is a three screen wide map of medieval Japan, sounds like an oriental King of Chicago to me. TV FOOTBALL is a pro football simulation that lookes just like the view you get from television. The first in a series of sporting sims, this game apart from a 28 team 16 game schedule, has broadcasters, cheerleaders, fans in the stand and a half time show. Keep it up Bob, you are doing great.

Wasteland

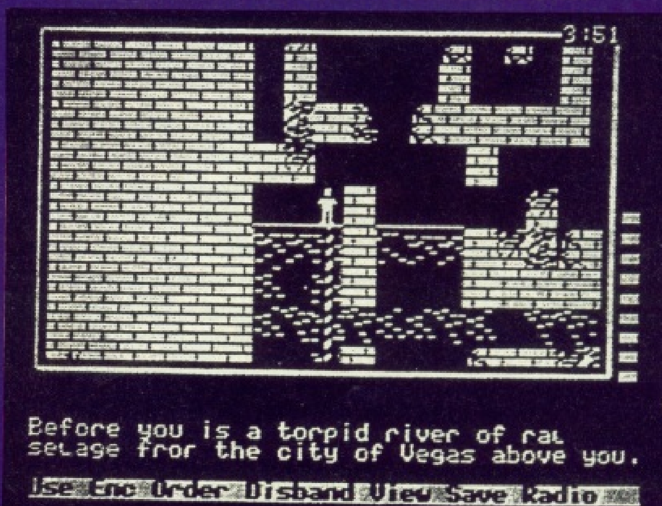
THERE is no doubting that Wasteland is Interplay's finest hour to date. It is a monumental adventure of epic proportions that has taken over two years to develop using some 17 designers and programmers, of which one happens to be Daniel Carver of Leaderboard fame.

Interplay cut their adventuring teeth so to speak on standard text/graphic releases like Mindshadow, Borrowed Time and Tas Times (a past Oskar winner) and then progressed onto Fantasy Adventuring with the much heralded Bards Tale Series. Much of the style of these past works are to be seen in Wasteland, along with a whole batch of new ideas, some of which are so original that I feel they will be "cloned" in many RPG's to come. Take it from me, Wasteland is the landmark in computer RPG'ing the way that Crowther and Woods pioneered the original Cave Adventure.



```
12:59
CONAN, choose:

R)un
U)se
H)ire
E)vade
A)ttack
W)eapon
L)oad/Unjam
Desert Dwell
1<1   NAME          AC AMM MAX CON WEAPON
1>CONAN              2  25  30  30 Uzi SMG
2>CUSTER             2  37  30  30 Uzi SMG
3>ROLLO              2   0  28  28 Knife
4>DOC                4   0  30  30 Knife
5>ACE                2   5  32  32 M19 rif
6>CHRISTINA          5  31  30  30 Uzi SMG
Use Enc Order Disband View Save Radio   1
```



```
3:51
Before you is a torpid river of raw
sewage from the city of Vegas above you.
Use Enc Order Disband View Save Radio
```

Let's talk about the plot for a moment. Wasteland is a post-nuclear holocaust adventure, and your party, the famed Desert Rangers, have been assigned to investigate some strange goings on in the desert. Since the nuclear bombardment, which many thought had wiped out the whole human race bar them, the world was slowly getting its act together again, by people meeting new people and forming new towns all over again. Obviously, in a world of waste and destruction there still has to be law and order of some description so hence the formation of the Desert Rangers, their sole job is to root out evil, restore settlements and maintain peace.

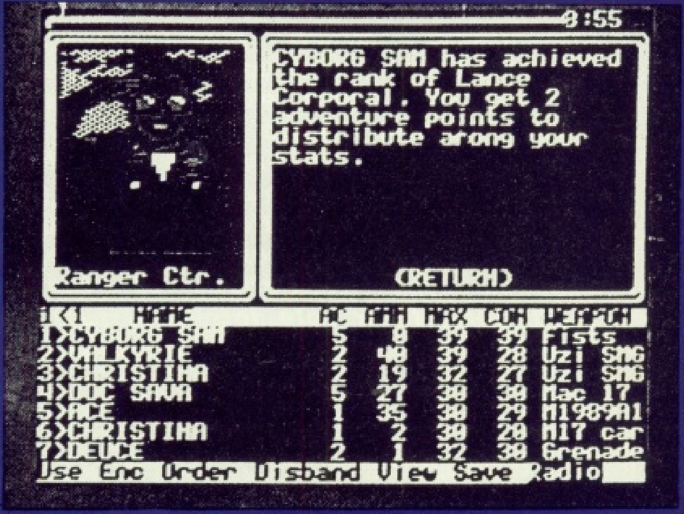
Your party starts with 4 members (there is a ready made party on disk if you prefer) and they are equipped with the modern day version of the sword & the MAC 17 SMG submachine gun. In fact there is a whole arsenal of weaponry available from M17 carbines through to LAW Rockets and explosives. Extra ammo clips are of course essential and during battle you could find yourself using up more than a few.

You begin at the Ranger Centre, your base of operations and explore west from there. This is where Wasteland really starts to get interesting, as every-

continued from page 60

thing, and I mean everything you do or that happens — is permanent, unchangeable, final.

This system however exciting during play, does have its drawbacks, as at the start you are required to copy all 4 disks which amounts to something like 48 disk swaps and around 45 minutes of waiting. Once this has been done, you can get cracking. One word of warning though, the only way to start back from the beginning is to recopy all 4 disks again!



```
                                              8:55
 CYBORG SAM has achieved
 the rank of Lance
 Corporal. You get 2
 adventure points to
 distribute among your
 stats.

Ranger Ctr.          (RETURN)
#<1    NAME          AC AMM MAX CON WEAPON
1>CYBORG SAM          5   8  39  39 Fists
2>VALKYRIE            2  40  39  28 Uzi SMG
3>CHRISTINA           2  19  32  27 Uzi SMG
4>DOC SAVA            5  27  38  38 Mac 17
5>ACE                 1  35  38  29 M1989A1
6>CHRISTINA           1   2  38  28 M17 car
7>DEUCE               2   1  32  38 Grenade
Use Enc Order Disband View Save Radio
```

As you travel, you discover a vast playing map using the now familiar overhead view with separate maps for each city and separate maps again for locations inside those cities. Somewhere in all this you will uncover a martian invasion plot, that has to be defeated, a Princess waiting to be rescued, and hundreds of characters to meet or fight (some will even join you) and dozens of sub plots and puzzles.

Remember, your characters learn as they progress and in fact promotions are attained by radioing back to the Ranger centre for news. Using your party's skills is crucial, for instance, finding the hidden cave entrance in High Pool can only be done by using the **PERCEPTION** *skill (providing it is high enough). Wasteland really employs your characters' skills unlike other RPG's that just have them for decoration or battle deciding.*

There you have it. A real classic of the genre, something not to be missed at any cost. I mean it.

PERSONAL RATING 10

WAR IN MIDDLE EARTH

At last Melbourne House have surfaced again, and what better way to do so than to go back to Tolkein, the name that made them. Essentially, the whole of The Lord of The Rings is on one game, in a role playing format similar to Faery Tale. You follow in the footsteps of Frodo, Aragorn and Gandalf, in the battle to get the Ring to the Cracks of Doom. Ranged against you are all the forces of the Dark Lord Sauron and the evil wizard Saruman. This sounds wonderful, hope it lives up to the build up. Out October £9.99.

LEVEL 9 SPLIT WITH MANDARIN

Because Mandarin have apparently decided not to spend much money publicising Level 9's adventures in America, the Austin brothers have decided not to renew their contract. Pete said "We can handle the UK market ourselves now".

ADVENTURE LETTERS

Dear Andy,
I am having a few problems. First of all, in the Hobbit I can't open the mountainside door, and is there any way to escape the blue eyes? Secondly, in Dracula, how do you escape from the labyrinth, and when the stairs fall down in the tomb, what do you do? By the way, could you please tell me the name of Rod Pike's adventure writing system, if not please recommend a good one, as I want to write my own adventures. I think your column is great, so keep it up.
Paul Taylor, Australia

I am not sure which you mean. If it is the crack, you just wait for one of the goblins to come out, if it is the dragon's door, then use Thorin's key. The blue eyes mean you have to wait to get caught by the wolf elf so hang around on the edge of the wood for a bit. I ran the complete solution to Dracula a few months back, but since you are in Aussie I will help you out. There is a secret passage behind the wardrobe, enter, look around, lift rail then go south to leave. Move wardrobe to reveal a secret staircase, take the lame and go down. The stairs problem is easy. Go to the hole in the wall, which is an open tomb, and remove the body. Enter tomb and it leds to Dracula's place. Rod Pike initially used the Quill with CRL enhancing it themselves. Incentives GAC is generally considered the best utility.

continued on page 62

TRYBRIDGE SOFTWARE DISTRIBUTION

Title	CBM 64 Cass	Disk
Ace of Aces	2.95	
Ace2	6.50	
Amer Civil War Vol 1		14.25
Amer Civil War Vol 2		14.25
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Blood Valley	6.95	9.95
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Carrier Command	9.95	13.95
Carriers at War		14.25
Chubby Gristle	6.95	
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Carrier Command	9.95	13.95
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Dear Andy,
Please answer me one situation once and for all. How on earth do I get the condor feathers in Moebius. It is so annoying to not come further to the realms of fire. Do I need the feathers in the realms of fire too? Can you help?
Bjorn Guillot, Norway

In a word no. If you remember I hated Moebius so much that I refused to play it again. Is there another reader who can help.

Dear Andy,
As a fan of Dragonlance, I was naturally interested in the article in Septembers issue. However you made a mistake, Tracey Hickman is a man! Secondly, continuing your debate on text/rpg adventures, rpg's I think will become more popular as they are an excellent bridge between traditional adventures and arcade games — requiring thought as well as a good sword arm! I do not believe however that RPG's will encroach on the text adventure as they are different enough to retain separate identities. As I enjoy both types and think that they should both be reviewed under "Adventure" it's nice to see that your section does just that. I have sent you a couple of maps of Bards Tale II which I hope will of use.
I have a problem, in Alternate Reality the Dungeon, level 3, how do I get past the Basilisk, where is the prison?
Bye, best wishes
Fiona Bissett, London

Thanks for your maps Fiona, and your very astute comments regarding our debate. I have not reached level 3 yet, can any one help a damsel in distress? And you are absolutely right about Tracey Hickman. Of course, everyone knows he's a man, don't they. Fortunately it wasn't me who made that boner. The 'A.M.' referred in that case to our revered — and not always correct — Features Editor, Anthony Mael!

Dear Andy
I hope that the Adventure section in CCI could be extended! So Andy, tell the ED that he should give your section more room or else he will feel the wrath of ten thousand Norwegian vikings!
Yours Olystein Tvedten, Norway

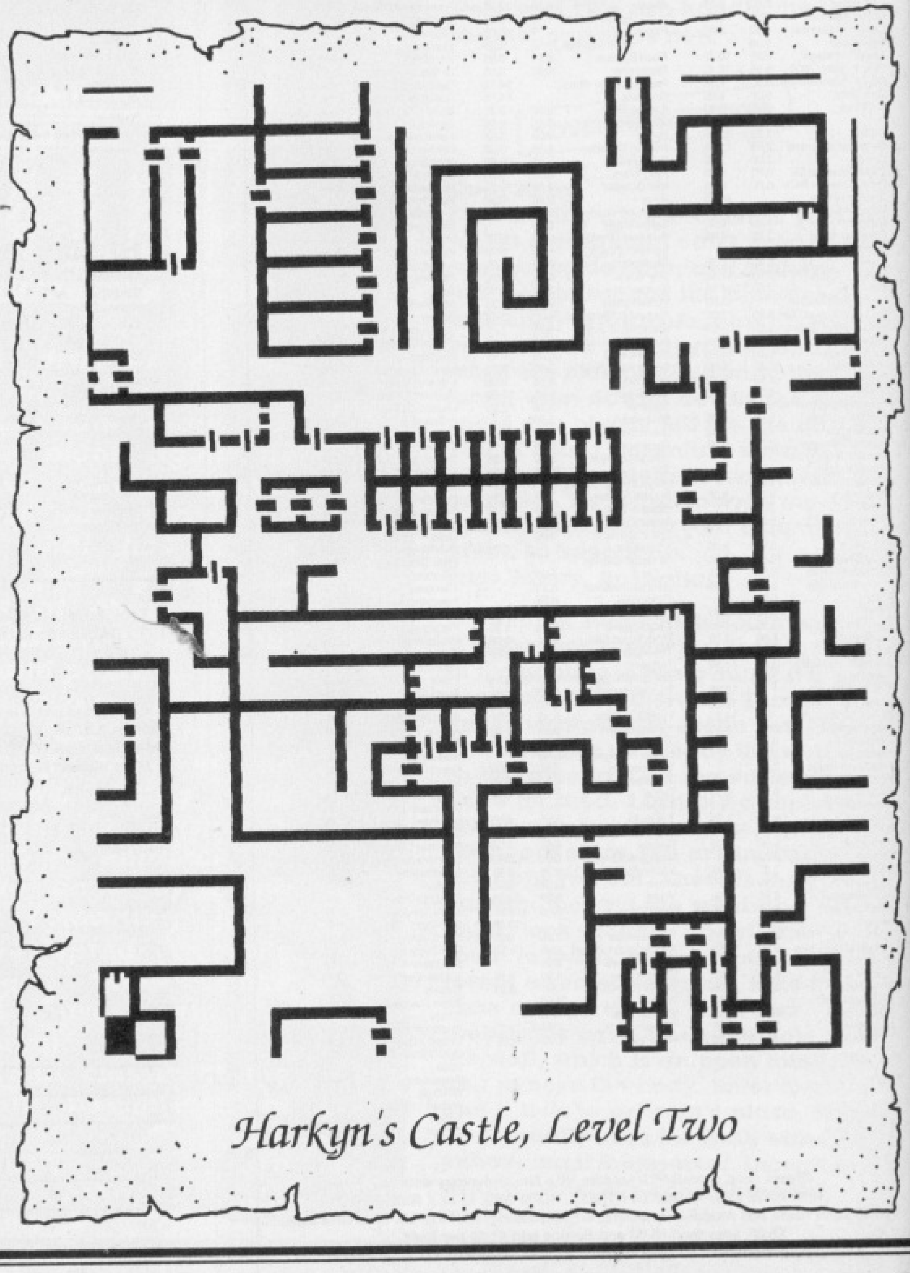
My Editor unfortunately is in to a bit of rape and pillage, so vikings hold no fear for him. Still I have passed on your note, you never know...

THE BARDS TALE SOLUTION CONTINUED. THIS MONTH, HARKYNS CASTLE, LEVEL TWO AND THREE...

We encountered another bodiless mouth uttering an incomplete poem. When the Magician shouted out the word that completed the rhyme an Ybarra sheild appeared, a most powerful defence for us. We hastily proceeded while fortune favoured us, and came upon an old man who spoke out a riddle. "Once man alive, now living death, it drinketh blood, and stealeth breath." Andreas knew the answer..."Vampire" he said, and we were allowed to pass. We were teleported to a room, where we found a flat square of silver, a strange object which we pocketed, who knows where it will come in handy? A Portal NW of us will allow us to ascend to the upper rooms, so we press on in that direction...

LEVEL THREE

All around us are teleport traps, and another old man, who asked for a name of a tavern. Skull Tavern is what he was looking for. That done we were accosted by Berserkers in an endless flowing stream, if only we had kept our green robes, we would have been spared this ordeal. At last we defeated them, hundreds lie dead, along with four of our brave party. With a small prayer for them said, we continue on. We get teleported again, this time to the gates of Kylearen's tower, were the small eye shape that we had found floated up into a statue which came alive. Terror, this was Tarjan the Mad God himself! We finally destroyed him but at great cost to our party number...TO BE CONTINUED...



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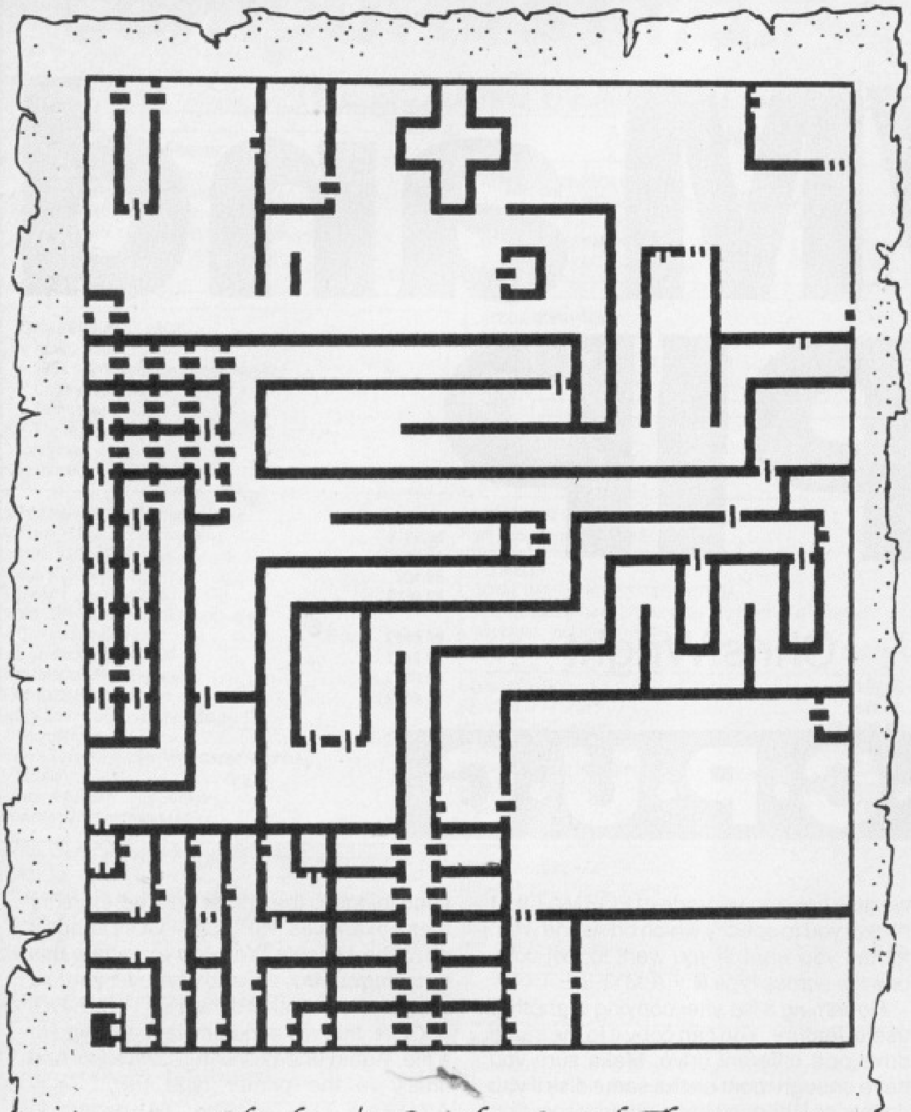

Harkyn's Castle, Level Three

ADVENTURE REVIEWS

FOOTBALL FRENZY Alternative software £1.99
OK Boss, you have done it, the lads have finally made it to the Cup Final. Who would have thought that Grimsditch Rangers would even get past the first round! Grimsditch by name and grim by design is this cheapie from Alternative. There are no instructions as such, just the knowledge that with three days to go before the big day, everything goes wrong. I must say, I found the parser quire frustrating and although this looks distinctly PAWed PATched and GACed, that is no excuse for poor packaging. The graphics are chunky block things, and do nothing for the game, which opens in your office with you at your desk facing a pile of bills. If you like playing fight the computer you will love this game, otherwise stay well away.
RATING..3

LA CRACKDOWN
Epyx £9.99
This is quite a good plot, that fails from lack of decent programming. Your mission in this animated adventure, is to stake out a shipping company and gather enough evidence to make a good drug bust. To aid you are a group of rookies who each have varying skills at one thing or another. You pick one, and he will be your eyes and ears, while you sit in the safety of your monitoring van. Your rookie goes where you tell him to go and searches various location on instruction. He will also engage other characters in conversation as he meets them, and again you control how much he says. After some time, the only progress I made was the discovery of two other locations, an airport and a nightclub, both of which I placed bugs to tape any conversations that might take place. Nothing happened except lots of cars arriving and leaving. My guess is that this game is pretty shallow, and that to drag out the playing time the author has made things happen very slowly. Stupid things like having a cheerful talk with a foreman in the warehouse at 3am in the morning did not instill me with a sense of realism at all. There is a game in there somewhere, but if I were you I'd give it a miss.
RATING..2

QUEST FOR THE GOLDEN EGGCUP
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The Rigels Revenge boys are back, only this time with a spoof version of The Hobbit mixed with Collosal Cave. You have been killed by the Pink Panther driving a C5, and on your arrival in Heaven been brought before God, who tells you of his need for finding the great Eggcup for the Golden Egg. If you manage to find it, then he will reincarnate you so you can carry on in life. Unfortunately, Heaven just happens to be at the top of a giant beanstalk (sound familiar?) and after exploring around the place for a while and picking up such wonderous objects as "a useful adventuring item", and "a turban", not to mention a silk dressing gown with the words G.O.D. sown on it, you descend through a fountain into a world populated with Dandalfs and Thorons (sound familiar?). There are some very funny moments, like finding a dead Sherlock in a train carriage, but also some strange bugs, I could not drop my Turban because my hands were full — but I wasn't carrying anything! As I have a preproduction copy this could be rectified in the finished version, but be warned. There are graphics for each location, which are simple but pleasant, and I found the whole game an amusing jaunt through adventure history. Well worth getting.
PERSONAL RATING 8

THAT'S IT FOR THIS MONTH, NEXT ISSUE LEGEND OF THE SWORD IS REVIEWED ALONG WITH MAPS OF ALTERNATE REALITY, BARDS I AND II AND STARCROSS (THE SOLUTION). SO LOOK OUT FOR THE GREAT MAP MONTH NEXT ISSUE.

CP/M and PIP

Chris Wright

I.C.P.U.G

PIP comes on your systems disk and is the resident copy program. It is one of those transient utilities you find yourself using a lot within CP/M but I will bet there is not a great many of you who get the most from the program.

PIP can copy single and multiple files from one disk drive to another, or you can use a single disk and do some disk swapping, using virtual drive E: for this purpose. Virtual drive E: is random access memory which is configured like an imaginary disk drive. PIP can copy files from an entire disk to another, copy a text file and send it to the printer or other output device. PIP can even rename files once the copying is complete but lets get down to the nitty gritty of this program.

To copy files on a single drive 1541/1570/1571/1581, all you need to do is the following. If PIP is on your diskette type PIP E:=A:*.* if it is on a separate disk boot it into memory and type E:=A:*.* Note the wild card used to copy the file names and extensions fields. Say you wanted to copy all the COM files across you would type PIP E:=A:*.COM or if it was all the files called DBASE but they had HLP COM EXE DOC TXT file extensions, you would type PIP E:=A:DBASE.* Easy isn't it? By using a virtual drive E you would have a lot of disk swapping but the job would be done.

Those of you with two drives instead of using the virtual drive label E use B: C: D: or even M: for the Ram Packs. This will then copy all the files you specified onto the other disk in the second drive provided you formatted it first. In the I.C.P.U.G. library we now have an upgrade of FORMAT that allows you to specify which drive and what format you want. If you want to just copy one file across type B:=A:MYFILE.TXT

Renaming a file after copying is another useful feature. You can copy it to the same drive or a different drive. Make sure you have enough room on the same disk if you do this as PIP must have enough room on the disk for the new file before it deletes the old file. This is done like so PIP B:NEWFILE.TXT=A:OLDFILE.TXT This copies the old text file from drive A to drive B with a new name.

PIP even allows you to combine files by concatenating them into one massive file. One thing you should remember is that PIP will stop when it comes across a control-z in a file, which is usually the default end-of-file character. The three files named next should all be on one drive. Type PIP BIGFILE=FILE1,FILE2,FILE3 This then creates one large file from three small ones.

From my experiences running the ICPUG 128 library, I realise that this next facility is not commonly known and will now prove very useful to many of you. You can use PIP to copy to and from devices in the system as long as the file has printable characters. Control-c aborts any PIP option. The logical devices you can use for PIP are CON: which the console input-output device (keyboard, AUX: which is any auxillary input or output device, and LST: which is the destination device assigned to the list output device (usually a printer). Control-P is not the best way to send things to the printer and therefore try these examples. PIP LST:=CON sends it all to the console. You can terminate this by typing control-z. Send whatever you like to a textfile like so, PIP a:TEXTFILE.TXT = CON: this will send any text you type to a file. Again end this with a control-z. And finally to the printer type PIP LST:= A:MYFILE.TXT[T8] The T8 option in square brackets expands any tab characters to the nearest column that is a multiple of eight.

One or two of you have invested in the RAM expansion pack for the 128 and the fact that CP/M supports it as a high-speed Ramdisk (drive M:) is even better. Using the MEX terminal program (in the I.C.P.U.G. library), download programs and files directly into the Ram expansion. This will survive a reset but not a switch off of the computer. This can really save time as the Ram expansion transfers data at 1 megabyte a second. The 1571 even without the sector verification (C1571.COM) disabled isn't that fast.

Another facility of the Ram expansion is for backing up of diskettes. Instead of using virtual drive E: to do a backup load all the files into Ram PIP M:=A:*.* then place a formatted disk in drive A: and reverse the process and hey presto almost instant backup! There you are, I told you there was more to PIP. If you wish to know more about I.C.P.U.G. and how we can help you with advice and our very technical newsletter please write to I.C.P.U.G., 30 Brancaster Road, Newbury Park, Ilford, Essex IG2 7EP.

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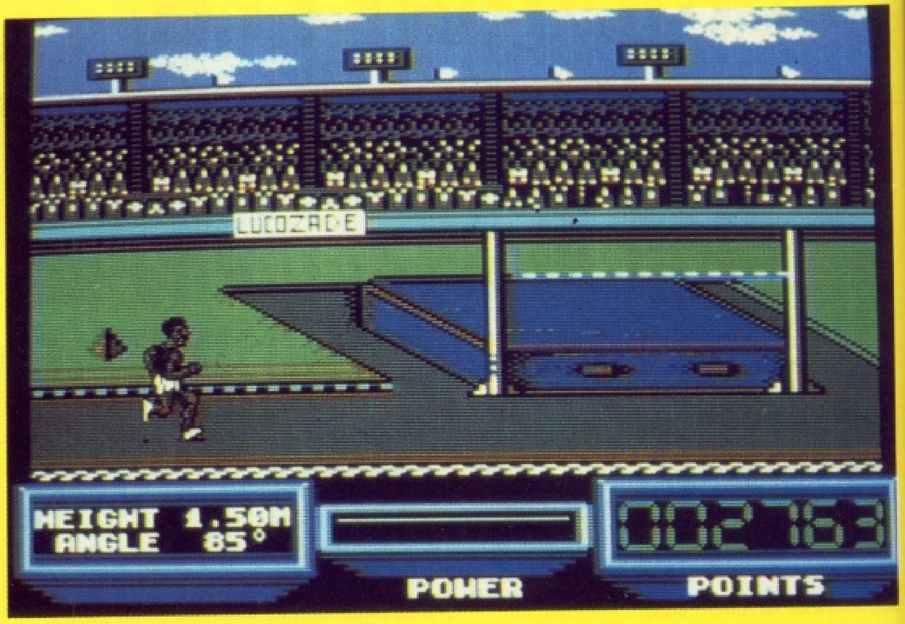
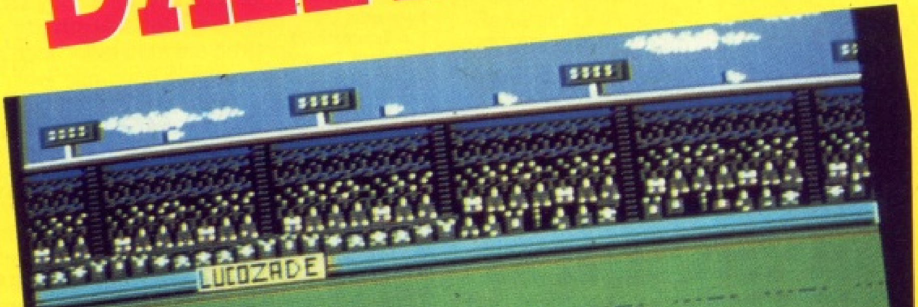
DALEY THOMPSON'S

While most sporting computer games are moving away from the old joystick waggle technique in favour of less sweaty control methods such as the mouse, Daley Thompson's Olympic Challenge combines that tough old waggling action with up-to-the-minute sophisticated presentation. The third in the Daley series, this is a souped-up version of Decathlon, taking us through Daley's ten favourite sporting pastimes.

Ocean's packaging is always attractive (mainly due to Bob Wakelin's superb artwork), and this is no exception. It comes in a large box containing the game, an audio cassette, a giant wallchart full of facts about Daley and the decathlon and of course, the instructions. The excellent likeness of Daley's portrait on the loading screen gives some idea of the detail of the graphics to come.



Before you get into the arena, you are given the chance to earn yourself a few bottles of Lucozade. (Why Lucozade? Because Daley appears in their adverts, that's why! And Adidas the sports shoe manufacturers get a puff too. And for that they can send the Luco bottles and Adidas trainers, my size to CCI!) In the gym, three exercises are controlled by sessions of pure stick waggling. The faster you waggle, the quicker the Lucozade bottles fill up. Big, colourful, detailed sprites and inventive sound effects liven up what could otherwise have been a rather mundane stage.



Next you get to choose your footwear from a line up of Adidas trainers. As they are all lined up in the correct order, all you have to do is scroll the list along once between each event. Making a wrong choice can drastically affect your performance, for example, adding about five seconds to a 100 metre sprint. It is here that you can choose to drink one of your cans of Lucozade to give you an extra boost for your weaker events.

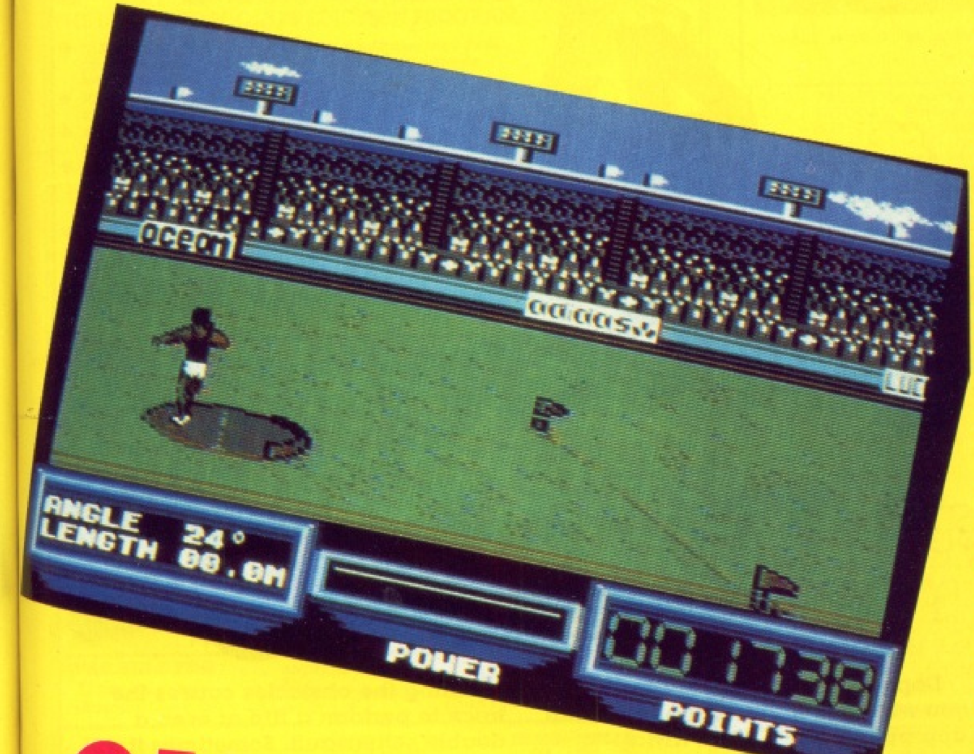
Finally you arrive on the track. Event one, the 100m sprint is a straight forward wiggle to the finish line. Although he looks a bit top-heavy, Daley is very well drawn and animated. Unless you make a total hash of this, you go on to select another pair of shoes for the long jump.

Very similar to the sprint, this calls for another bit of frantic joystick action with a well-timed press of the fire button to send you onwards and upwards over the pit. Shot putt plays just like the long jump, only with Daley spinning and throwing instead of running and jumping.

High jump is very similar to the same event in Summer Games II. The usual side-on view shows you speeding towards the bar. Press up to position yourself before jumping and adjusting your angle as you fly over the bar.

One of the real stick strainers is the 400m. The best part of a minute spent waggling hardly leaves you in good shape for the hurdles which come next (a sensible time for a glug of Lucozade if ever there were one).

Unlike the other events, the discuss



has a strangely complicated control method. As usual, waggle the stick for speed, then press fire to start spinning. Press up to set the angle and then fire again to throw the discuss. It may sound simple but fitting all that in a couple of seconds is far from it!

Javelin is another waggle and chuck event, slightly varied from the rest by its slower angle meter which calls for different timing. The pole vault is next, followed by the last straw: the 1500 metres. Experienced wagglers will recall the method used in Activision's Decathlon which allows you to cruise most of the way at "half-waggle".

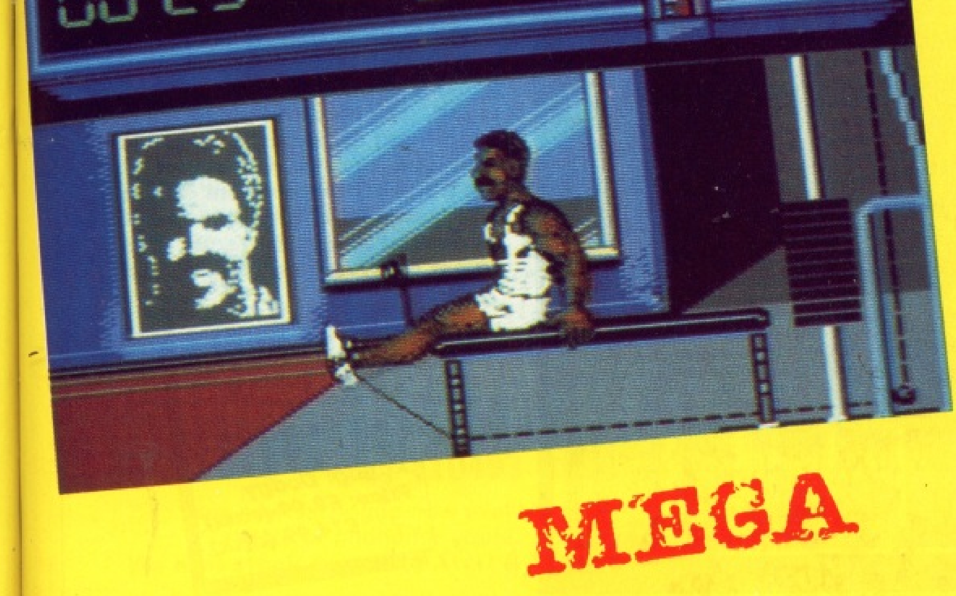
So, D.T.'s Olympic Challenge has little new in the gameplay area. What it does have is some very, very nice graphics, excellent presentation, very passable sound and a tremendous amount of hard work in store for the armchair athlete. Having not played a pure and simple Track and Field game for some time I enjoyed every minute of it.

OLYMPIC CHALLENGE

OCEAN

While Daley Thompson's latest Decathlon — the Olympic Challenge — breaks no new ground, I can see it breaking a tremendous amount of over- excited joysticks through the coming months. Go and buy this D.T. Challenge, you won't regret it. It keeps up Ocean's brilliant standard of excellently programmed and terrifically playable games. Highly recommended.

T.H.



Graphics: 93%
Sound: 73%
Playability: 82%
Overall: 82%
Rating: MEGA
Price: £9.99 (c)
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MEGA

C64

DODGY

4x4 Off-road Racing

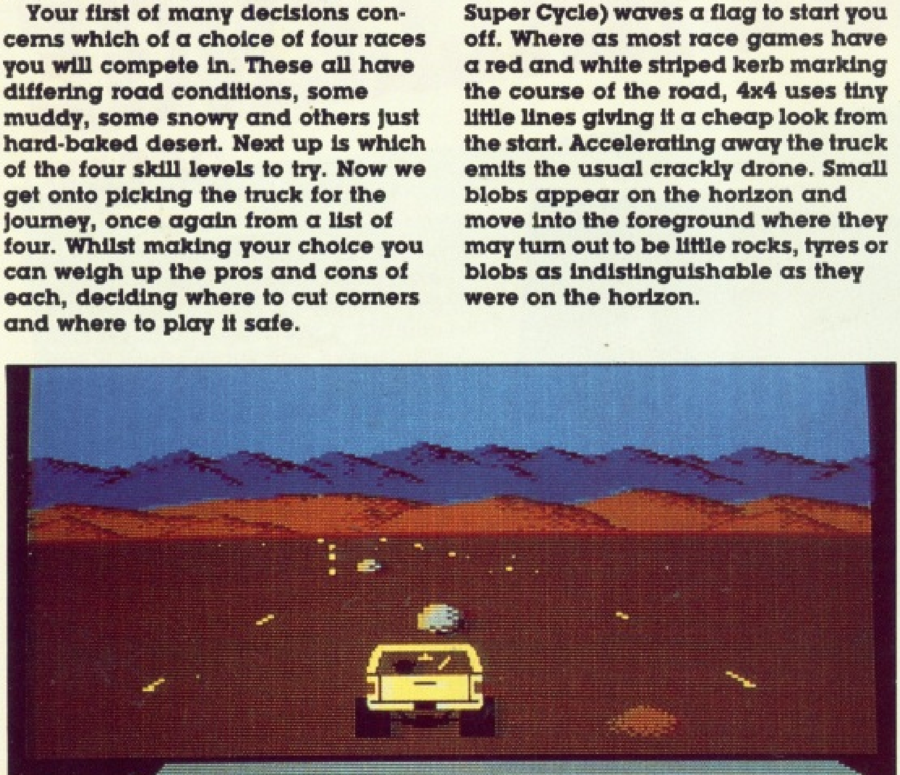
Epyx

With Pitstop II and Super Cycle under their belt, Epyx now give us 4x4 Off-road Racing, a simulation of cross-country jeep racing set in a variety of deserted North American locations. Sounds promising, but with this one Epyx have let their standards slip.

Your first of many decisions concerns which of a choice of four races you will compete in. These all have differing road conditions, some muddy, some snowy and others just hard-baked desert. Next up is which of the four skill levels to try. Now we get onto picking the truck for the journey, once again from a list of four. Whilst making your choice you can weigh up the pros and cons of each, deciding where to cut corners and where to play it safe.

Depending on your chosen route you will need to fit out the truck with appropriate tyres. More trivial decisions follow, involving the buying of spares and the like. If you are still awake you can now get down the race track.

A familiar little man (first seen in Super Cycle) waves a flag to start you off. Where as most race games have a red and white striped kerb marking the course of the road, 4x4 uses tiny little lines giving it a cheap look from the start. Accelerating away the truck emits the usual crackly drone. Small blobs appear on the horizon and move into the foreground where they may turn out to be little rocks, tyres or blobs as indistinguishable as they were on the horizon.



Hitting the obstacles causes the truck to perform a flip or even a double sumersault. Sometimes it will ride up on two wheels for a short while, as in Buggy Boy; but as there are no narrow gaps to squeeze through, this is pretty useless. Apart from the bobbin wheels, this is the jeep's only animation. Every so often rival racers appear, but when this happens any other obstacles disappear until it leaves the screen.

Hills come and go with no effect on the game and bogs call for a touch of rapid button pressing. Checkpoints can be used for carrying out repairs and refueling. With 4x4 Racing, Epyx have attempted a Buggy boy style race game with added strategy elements. The result has turned out to be a very sub-standard Buggy Boy look-alike with unnecessary and tedious delays.

Do not be misled by the dynamic cover artwork. Hidding beneath is a game with outstandingly poor sound, graphics and playability. Add to that the annoyance of the multiload, and 4x4 Off-road Racing is a huge disappointment all-round. A very surprising product indeed to come from one of the really great games software companies. *T.H.*

Graphics: 32%
Sound: 15%
Playability: 38%
Overall: 36%
Rating: Dodgy
Price: £9.99 (cass)
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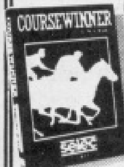

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HORGAN'S HINTS

Not having had any strenuous exercise for years, when Daley Thompson's Olympic Challenge turned up I was finding all that stick waggling heavy going. Thank heavens for my trusty Action Replay cartridge! Spurred on by my aching right arm and cramped left hand, I ventured forth into the murky depths of the game's code, and surprisingly enough came up with a little alteration that allows Daley to run 100 metres in 8.56 seconds (wearing beach sandals!). If anyone thinks they can work it into a more user-friendly routine that also goes for the shot putt and discus (including restart addresses), then get it into me and earn yourself a trendy CCI T-shirt.

Daley Thompson's Olympic Challenge

You'll need a cartridge that lets you alter the code and restart the game where you left off as I haven't yet got the restart address. Once the game loads, freeze the game and either enter the monitor and change addresses **$0881** and **$0886** to **NOP**, or enter these pokes:

POKE 2177,234
POKE 2182,234

That will get you a full set of Lucozade bottles in the training session. For the main events you need to freeze the game once more on the shoe selection screen. If you are using a machine code monitor, alter addresses **$B213** and **$B218** to **NOP**. Alternatively, use these pokes:

POKE 45587,234
POKE 45592,234

Those modifications will put Daley into Superman mode for the running sections of each event. The shot putt and discus need to be waggled however, but that gives you a chance to use up those Lucozade bottles.

Dark Side

For anyone having difficulty with Incentive's Freescape-created adventure (there must be quite a few), Robert Troughton has these pokes:

POKE 26272,173:POKE 29005,173 (unlimited time)
POKE 24891,173:POKE 28671,173 (unlimited fuel)
POKE 26193,173:POKE 26221,173:POKE 29337,173
POKE 19013,173:POKE 29328,173 (unlimited shields)
SYS 36096 (starts the game)

You didn't forget to load and reset the game before typing those in did you? No, well that's OK then.

To Hell and Back

Either unlimited energy or unlimited lives, the choice is yours. Reset the game and enter one of these followed by the restart command:

POKE 32371,173 (unlimited lives)
POKE 32524,173:POKE 32483,173 (unlimited energy)
SYS 30464 (restarts the game)

Rogue

Reset and enter these pokes for unlimited strength (thanks again to Robert Troughton):

POKE 27190,173:POKE 31496,173
SYS 2288

Storm Bringer

For a perfectly strong, happy and very magical Magic Knight, try out a few more of the Troughton pokes:

POKE 21429,100 (100% happiness)
POKE 21428,100 (100% strength)
POKE 21431,100 (100% magic)
POKE 21430,100 (100% stamina)
POKE 15335,173:POKE 15805,173:POKE 33312,173 (unlimited magic)
POKE 9808,173:POKE 15114,173:POKE 16708,173
POKE 18708,173:POKE 9886,173:POKE 7965,173 (unlimited strength)
SYS 6607

Giana Sisters

Some from Casey Gallacher that disable collision detection but still let you collect the diamonds. By the way Casey, you sent me a silly poke for Wonderboy but didn't include a restart address, so get it in now!

POKE 10378,169
POKE 10379,0
POKE 10380,234
POKE 10392,169
POKE 10393,0
POKE 10394,234
SYS 2098

Richard McDavid has come up with another for Giana Sisters, this one changes the colour of Giana's hair once you have the lightning bolt:

POKE 8755,137
SYS 2098

Agent X II

Casey Gallacher tells us how to become invincible, just reset the game and enter:

POKE 43750,169
POKE 43751,0
POKE 43752,234
SYS 49152

DALEY
OCEAN
ATTEMPT 1
000055
ANGLE 00°
LENGTH 00.0M
POWER
POINTS

Daley Thompson's Olympic Challenge

HORGAN'S HINTS

Bionic Commandos
A little tip that might come in handy came my way from Steven Lounds: once you have one of the more powerful weapons, restart and you will keep the weapon for the next game!

Driller
Stephen Moran has almsot finished Driller but can't seem to get at the 18th sector. Any help would be appreciated. What he has done is supply this guide to the other 17 to take you through most of the game.

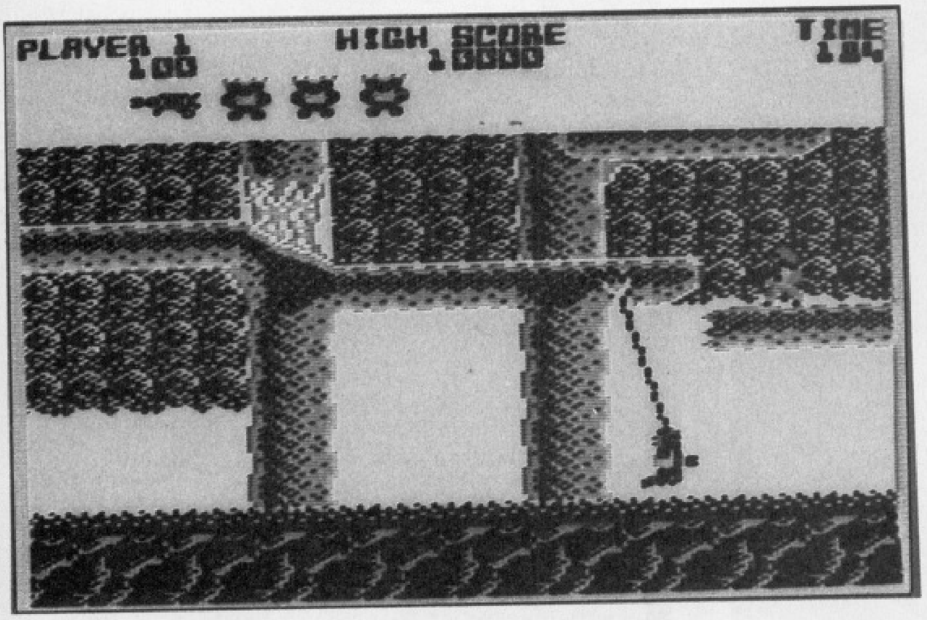
AMETHYST
Drill the point marked with an X. The switch on the wall allows access to Obsidian.

TOPAZ
The laser is the problem here. Shoot it and it will turn away so you can proceed to Beryl.

EMERALD
Difficult one this: shoot the upper crystal, run over the lower block and it will disappear. Shooting the crystal will increase your shields and energy. The drilling point is in the centre of the sector. Dodge the lasers (they are indestructable). Access to Graphite (East), Alabaster (West), Lapis Lazuli (North).

GRAPHITE
The switch has no effect. The drilling point is under the block. To make it disappear, land the aircraft on it. Guide the probe carefully along the pathway. Return to Emerald after drilling and from there to Lapis Lazuli.

LAPIS LAZULI
Shoot the switch to remove the barrier. Pyramids should be shot for bonus points. Shoot the switch again, return to Emerald and from here to Nicolite.



Bionic Commandos

BERYL
To enter the complex, shoot the power cables to deactivate the laser. Enter the building and you will find signs on the wall. Shooting three squares opens the exit to Aquamarine, three triangles to Basalt.

RUBY
Stay in the middle of the pathway. Don't shoot the crystal as it will shoot back. Exits are to Malachite (North) and Opal (West). Drill and proceed to Malachite.

MALACHITE
The complex here can be entered by going through the hole using the aircraft. Shoot only the eyes of the guard to disable it. Shoot everything else for points. Drill Malachite and proceed to Emerald (North)

NICOLITE
Watch the mines and shoot the switch. Drill and return to Beryl via Topaz. Take the left exit to Quartz.

QUARTZ
To disable the laser, shoot the cord suspending it. X marks the drill spot. The switch on the wall gives access to Diamond.

ALABASTER
The drill point is situated under the water. Shoot the water five times and it will drain away. Don't fall down the steps. The switch gives access to Diamond. Drill and return to Emerald. Take the exit to Lapis Lazuli and from there to Amethyst. Take the right hand exit to Obsidian.

OBSIDIAN
This appears to be the last acccessible sector in the game. Shoot the lasers and shoot the block next to the trench which will allow you to bridge it. The pyramids can be shot for bonus points.

C16——

All these come from M. Vainola and include the restart address missing from the Dingbat cheat in the September issue.

Arthur Noid
Load the game, press **RUN STOP/RESET and type:**
M3020
Change **A9** to **60** for infinite balls.
Type **G2000** to start.

Cops and Robbers
Load the game and enter the monitor.
M3027 changes **CD** to **60** for invincibility
Type **RUN** to start.

Dingbat
The SYS number missing from the cheat printed in the September issue is 12288, which should be entered following the alteration.

Survivors
Load the game and go to the monitor.
M32A3 change **03** to **AD** for inifinite lives.
SYS 11776 starts the game.

AMIGA——

Bionic Commandos
Attempting to leave the parachute when your commando is disappearing off the bottom of the screen prompts a bug that continually scrolls the background, mucking up your game. If you lost a life around the same height as the level exit, trigger the bug on purpose and it will scroll you onto the end of the level automatically.

Once again we come to the end where I try desperately to come up with some witty comments. Sorry, I can't think of one this month so you'll have to go without. You know the address to send all your perfect pokes and cheeky cheats to, but for the forgetful ones among you here it is:

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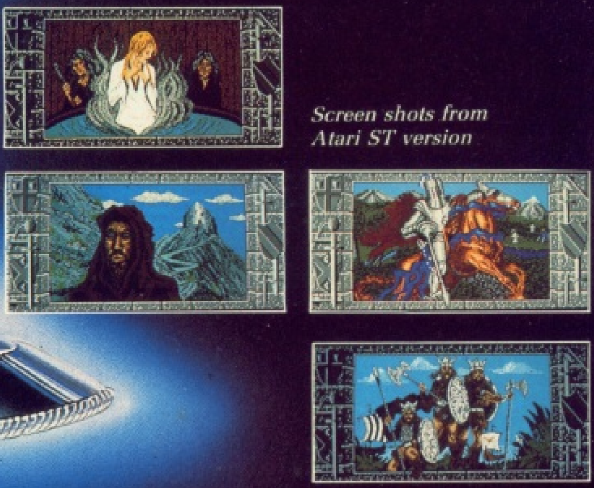

Screen shots from Atari ST version

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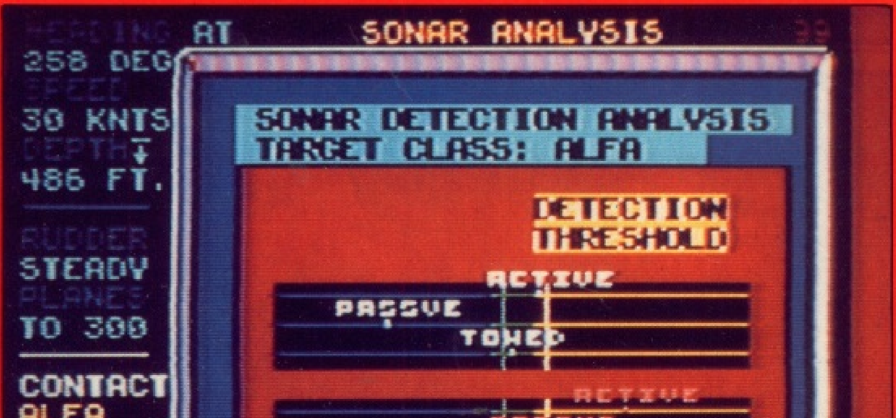
Red St

The submarine tactics with which most of us are familiar never really happened. We've all seen the dramatic movie representations of sweating men in the tight confines of a fleet boat's conning tower. But in fact the most effective work done in World War II was conducted on the "roof" (surface), where they could use their higher surface speed to conduct "end runs", get ahead of their targets, then close in and fire at close range before escaping in the confusion.



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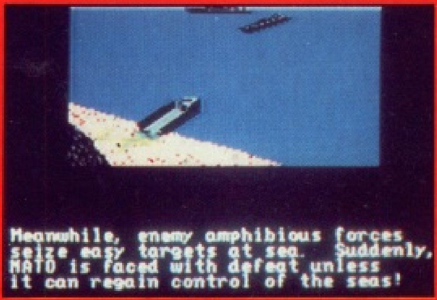
SONAR ANALYSIS

SONAR DETECTION ANALYSIS
TARGET CLASS: ALFA

Modern technology has changed all that with nuclear power and improved sonar. Today's submarine can outrun most surface ships, and modern passive sonar can actually outrange the radar used by USA subs during WW II. It is not unusual today for a sub to detect a surface ship, on sonar, at ranges of over thirty nautical miles. Torpedos, once relatively simple machines that ran a straight course until they hit a target or ran out of fuel, are now robotic kamikazes, programmed to search for their targets with active and passive sonars, then close in and destroy it with a half ton (or nuclear) warhead. Or the submarine skipper can fire surface-to-surface missiles that can easily fly those thirty nautical miles.

One thing, however, has remained constant: the business of a submarine is *stealth*. Once detected, the enemy surface commander has more ships and weapons to use than the sub. Helicopters with sonobouys and dipping sonars — the subs *deadliest* enemy — which can hunt and localize their quarry, then engage it with homing torpedoes of their own. You are safe only so long as you are undetected. Your only real advantage is invisibility. Submarine warfare is ambush, followed by evasion. A game of life and death played in three dimensions of cold, wet and unforgiving darkness.



Meanwhile, enemy amphibious forces
seize easy targets at sea. Suddenly,
NATO is faced with defeat unless
it can regain control of the seas!

The sub's other enemy is, of course, another submarine. He lives in your environment, knows every trick that you know. Enemy subs are getting better with improvements in hardware and training. Their mission, like yours, is to sink each others fleet of ships.

You play the part of a thirty-nine year old graduate of the USA Naval Academy, you've worked hard over the last seventeen years. Six months ago you achieved your lifetime's dream — command of your own SSN.

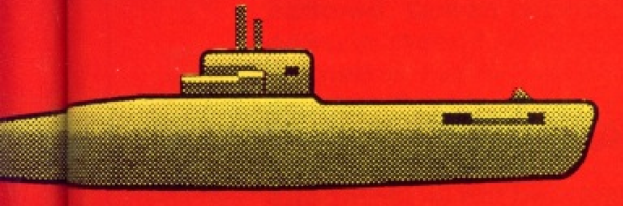
You are now the commanding officer of a ship at war, the most demanding and god-like job in the world. You are responsible for the safety of your ship, for the lives of over a hundred men, and most of all, you are responsible for carrying out the missions assigned to you by COMSUBLANT and COMEASLANT.

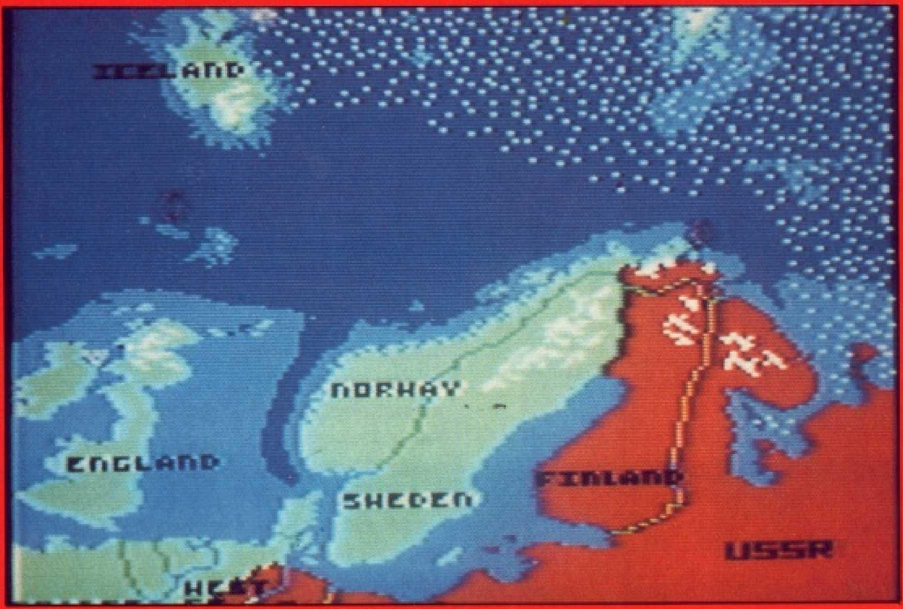
This is your introduction to what is supposed to be a game, it however is far from that, the suspense and feeling of cunning to outwit your opponent will have you on the edge of your seat as if you were in the real situation. A simulation that will bring out the worst in all of us.

The loading sequence and other parts of the simulation are quite similar in some respects to Microprose's helicopter simulator "Gunship". A sinister musical background on the loading screen along with adverts for the other Microprose programs set the scene, keeping up the quality of their previous packages, Airborne Ranger, Pirates, F19 Stealth Fighter, Gunship etc. All of which were very successful because they had good gameplay plus strategy with detailed accuracy giving the "feel" of real life situations.

orm Rising

Microprose

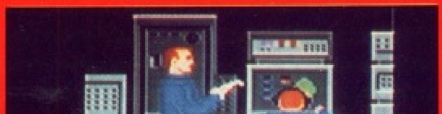




This disk-based version of Red Storm Rising has a double-sided disk which you are asked, as the program prompts from time to time, to flip over to access more information from the disk which must be kept in the drive at all times. A 108 page manual accompanies the disk. This not only contains a potted history of submarine warfare but takes you further forward in time to how Tom Clancy, the author of the best seller "Red Storm Rising" sees the situation developing up to the year 1996.

The manual is divided into three sections for convenience. Part 1 gives specific instructions for all the simulation displays and controls. You use in conjunction with this a keyboard overlay, there are so many different commands input directly from the keyboard that these overlay instructions are a necessity. Part 2 lets you in on a few of the secrets giving you an insight into the tactics, tricks and subtleties of the gameplay. Part 3, the reference manual, provides the background data on weapons, ships, and boats involved.

After the loading screen a choice is given to either start a new game, resume a saved game or format a disk for saving etc.



FROM COMSUBLANT: "Further search for enemy subs not considered productive. Disappointed you failed to find target. Stand by for new Operations Orders on next downlink. Expect better hunting from you next time."

Then another choice of scenarios, these begin in a situation in 1984 and progress in 4 year steps through to 1996, each having features unique to that period in history. The further on you go the more sophisticated the enemy's hardware and sensitive their detection methods.

180
225
270
315
360
45
90
135

The manual helps you to get started and become familiar with your vessel and its capabilities. A scenario for a beginner lets you into full-scale war, able to blow up the enemy but the opponent's torpedoes have no effect on your sub when you get hit. It takes quite some time for the beginner to become fully conversant with all the sophisticated and very complex weaponry, detection and evasion systems. Having experimented finding other subs or surface shipping, blowing them out of the water then comes the time to fight for *"real"*.

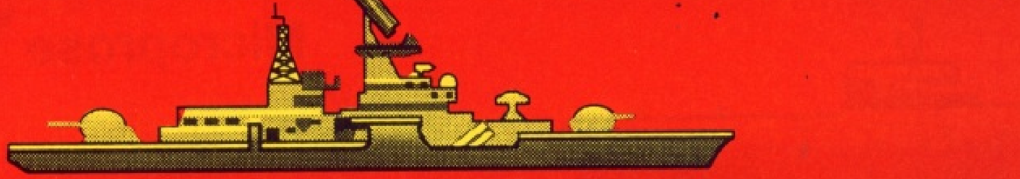
When you start a new game you can select one of four different time periods. I found the best period to be the present time 1988. This period happens to be the time of the scenario represented in the book "Red Storm Rising" where the Russians have launched the new Sierra and Kilo class subs. As for your defences you have the new Tomahawk missiles and improved Mark 48 ADCAP torpedoes. A well-balanced position to pit your wits against a cunning opponent.

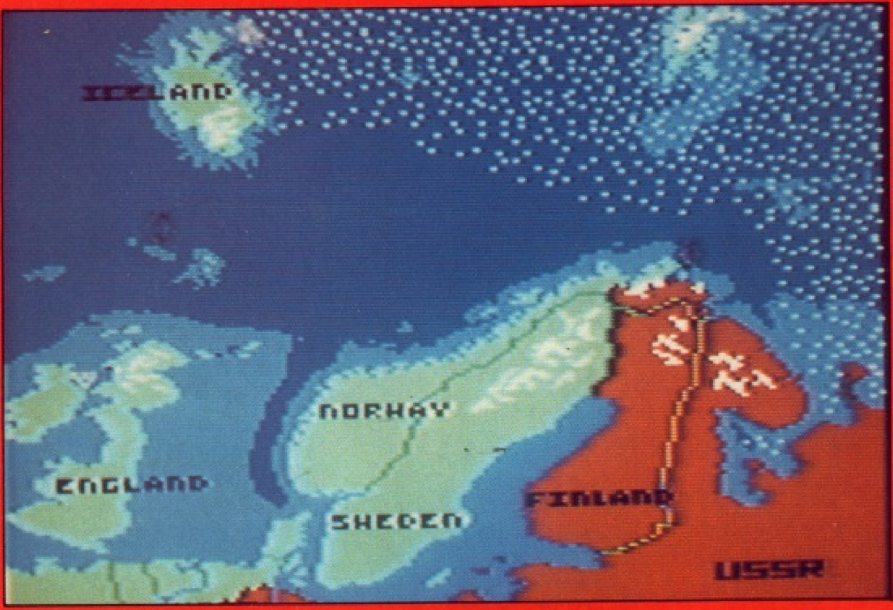
There is a warship identification test similar to the test in the Microprose "Gunship" helicopter simulation, here you use the reference manual to help identify the image presented to you. If you

cont. on next page

continued from page 75

Red Storm Rising





fail the test you are assigned to further training instead of going to war. Passing the test lets you chose a submarine, this will be your home for the duration of the war, sink or be sunk!

There are four levels of challenge ranging through beginners level, normal, serious, or the ultimate challenge "the Red Storm" itself.

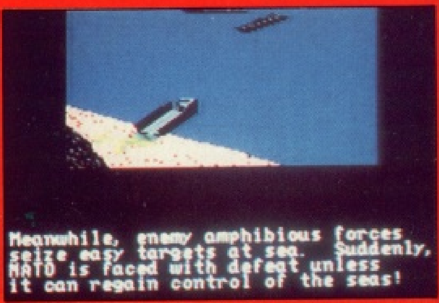
You help to decide the outcome of the entire World War III, your actions contribute directly to the result. If you think that you have it in you to save the world as we knot it, then this challenge must be the most demanding challenge ever thought up on the home computer, don't foul up 'cos everything depends on you!

Different scenarios, there are three groups, such as training actions providing an easy introduction and learning environment. Battle simulations where one on one or more specific categories and enemy forces can be attacked. Red Storm Rising lets you in on the "big time". Each choice can be played at various levels of challenge with the sub of your choice.

You then get the mission orders which explain your current objectives and may describe the enemies you might encounter. When your boat meets the enemy the "battle" begins. Navigation is easy to pick up, direction, speed and depth, but the rest need a great deal of study and practice. These include tactical display, secondary displays, sonar, radar, weapons, all of these need interpretation, use the right tool for the job. Mastering these techniques can take a while, adding to the addictiveness. The satisfaction comes when you detect, stalk your prey, close in slowly, discharge the torpedo and successfully evade any counter attack.

Your home port for these missions is Holy Loch, up in Scotland. The main arena for battles take place in the unforbidding Norwegian Sea, cold water, ice floes and thick pack ice. Here you engage the enemy, a "battle" will involve three distinct phases. First you attempt to identify and localise the enemy. This phase is basically a sensor duel. You can detect the strength of contact with your sensors and also work out how strong your chances of detection by the enemy are. Second phase is the tracking and clearly identifying your target, closing in, firing off your torpedos. Once the target is in range, with today's deadly weapons, the vessel which launches the first well-planned attack is usually the victor. The final phase is to get the hell out of there without getting a shot up the rear! Effective use of both offensive and defensive assets simultaneously is the true test of your battle skills.

If you are looking for a game to test your abilities and tactics to the limits. If you want a simulation with the sharp taste for realism. If you want a wargame that's not just a shoot-em-up, that's not a pilot's or tank commander's view of a war, then Red Storm Rising from Microprose is the most accurate submarine simulator ever to grace the screen for the 64. Sail yourself full speed down to the nearest computer store and buy it now! It will give you month's or even years of interest and excitement. Rating? Its got to be 'Awesome!!' *B.C.*



Meanwhile, enemy amphibious forces
seize easy targets at sea. Suddenly,
NATO is faced with defeat unless
it can regain control of the seas!

Price: £14.95 (C) £19.85 (D)

Charts

The company that seems to be dominating the games market this year — Ocean/Imagine — has struck again! This time with a game that they did they did not hype up too much but that seems to have caught the public attention by its sheer playability. Salamander, reviewed in last month's CCI, has hit the Top Spot with a first time entry that can't be bettered. Ocean certainly seem to know how to pick 'em! It has pushed down to second place last month's leader — Football Manager II. But there is another footie game moving up fast, Goliath's Tracksuit Manager. Number Four is another Ocean newie Vindicator with Go's well-received Bionic Commando close on its heels. Roadblasters falls five places to seven. But last month's Number Four Great Gianna Sisters disappears altogether — not because you won't buy it but because you can't. It's been withdrawn from sale because of legal problems — it looked just too close to Mario Bros! Watch out for a bubbler under: Epyx' Summer Edition.

For the budgets it's quick and all change with Encore's Battleships — loved that game at school, didn't you? — hitting Number One at first try. Firebird's European Five-a-Side comes in to grab the Number Two place. Stunt Bike Simulator from the same stable holds to Three and the prolific Alternative look to be on another winner with Rally Driver.

For the Amiga a new number one the mega-rated Carrier Command from Rainbird flies into the format leader position, displacing E.A.'s Interceptor. Football Manager II clings to third position and Ikari Warriors hasn't managed to move from Four. But the one to watch for is the wondrous Rainbird release Starglider. It could leap into Top Spot next month.

GAME TITLE	COMPANY	PRICE	RATING
C64			
1 Salamander	Ocean	£9.95	Mega*
2 Football Manager II	Addictive	£9.99	Crisp
3 Track Suit Manager	Goliath	£9.95	T.B.A.
4 Vindicator	Ocean	£8.95	T.B.A.
5 Bionic Commando	GO!	£9.95	Mega
6 Empire Strikes Back	Domark	£9.95	Iffy
7 Roadblasters	US Gold	£9.99	Crisp
8 Impossible Mission II	Epyx	£9.99	Crisp
9 Pacland	Grandslam	£9.95	Mega
10 Target Renegade	Ocean	£9.95	Mega
Budgets			
1 Battleships	Encore*		
2 European Five-a- Side	Firebird*		
3 Stunt Bike Simulator	Firebird		
4 Rally Driver	Altnerative		
5 Steve Davis Snooker	CDS		
Amiga			
1 Carrier Commando	Rainbird	£24.95	
2 Interceptor	Electronic Arts	£24.95	
3 Football Manager II	Addictive	£19.95	
4 Ikari Warriors	Elite	£19.95	
5 Starglider II	Rainbird	£24.95	

★ NEW ENTRY

Fun Biorhythms

Free Spirit Software Inc.

We are all . . . well most of us . . . "normal" human beings, if there is such a thing as "normal". We are all prone to the same kind of feelings, emotional, intellectual and physical. However our well-being is never very stable.

One day things seem to be going quite well for you, yet the next almost everything you say or do may appear to be against you. If you feel bad tempered one day you may be told by someone that you "got out of the bed the wrong side"! I suppose this is possible, but more probably it may just be something inside you that does not feel quite right. How can this be so? Why do feelings inside us keep changing? What is the answer? Well, some scientists believe the answer lies in our biorhythms.

Physically we are prone to ups and downs in a cycle that takes 23 days from the starting point up to the top then down to the bottom and back again up to the starting point. The same up and down cycle for our emotions, but this time it takes 28 days to complete the whole cycle. Intellectually they claim, we are all affected by a cycle that lasts 33 days.

Each cycle has a starting level which is said to be a critical day (a day when you are at your worst). As the days pass the levels rise to a high point at which time you feel at your best for that particular cycle. For the next few days the level drops, crossing over the starting point level, again a critical day, then down through to the bottom of the curve, once more you feel on top of the world for that cycle, then back on up to cross the starting point. The time taken to complete the cycle is dependent on which cycle you are following.

Did you have to meet someone special one day at a particular place at a predetermined time? Did you get there on time or did you completely forget to turn up? If you forgot it was probably down to the fact that your intellectual biorhythm reached a critical day. On the other hand you may have remembered and in your hurry to get there, fell out of the bus, tripped over the pavement, trod in something you shouldn't and spilt your drink all down the front of yourself. I am sure that you all know the kind of thing I am talking about. This represents an all-time low on your physical cycle. It is quite possible you may have not turned up because you were completely fed up with yourself and feeling too low emotionally.

In each and everyone of us there is, it is believed, a body clock. Ticking away . . . slowly on and on in a rhythmic cycle which we are, it seems, unable to stop or control.

The day we were born is thought to be the starting point for all of our biorhythms. If each of the three kinds of feelings run at different speeds then they will go out of sync. Occasionally, two feelings will coincide either both good on the same day or sometimes both bad, usually with disasterous results.

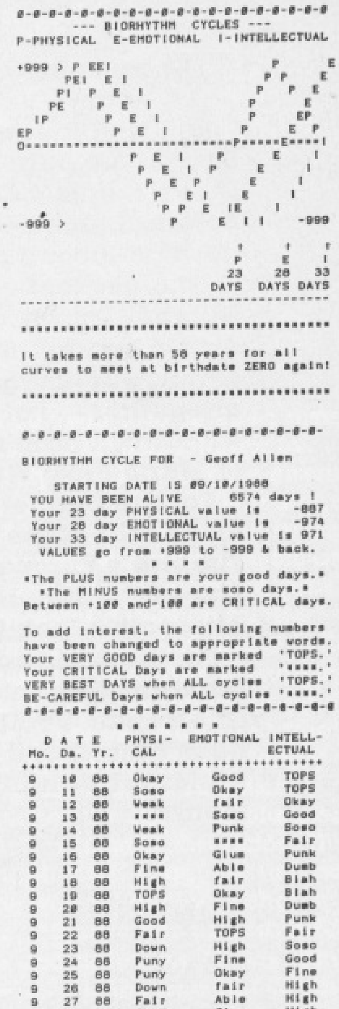
There comes a time when all three are reaching a high point. Watch out for these as this will be the best time to make decisions or participate in physical or emotional exercise. Quite the opposite may occur when all three are critical. Best to stay at home in bed all day when this happens, so look out for these days!

The Fun Biorhythms program itself runs on the C64 or on the C128 in C64 mode. You will require a disk drive and a Commodore compatible printer. I must point out here that the program will not work without a printer (my only criticism). I have never seen a biorhythm program before for the C64 but I have seen others. Some have a screen display of a graph so you can see the levels represented on the screen, others just display text on the screen. With Fun Biorhythms I would like to see the ability to output to screen as well as to the printer, this would allow many more C64 owners the chance to get the benefit of this program.

Operating the program could not be more simple. Follow on screen prompts, enter name, enter birth date, enter particular date for starting point of printout, then enter how many days you would like to show in sequence. That's all there is to it. What you get is a neat printout personalised record to keep and look at each day so that you can be aware of how you should be feeling and make allowances for the bad days!

The computer works out the number of days you have been alive, this is added to the printout. Quite a good idea but who needs to be reminded once you reach 40 years old? The sample printout shows a person's 18th birthday biorhythm, seems to be quite a good day doesn't it. This program seems to be quite good too. Recommended to all those who want to be in tune with their rhythms!

B.C.



```
0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0
      --- BIORHYTHM  CYCLES ---
P-PHYSICAL  E-EMOTIONAL  I-INTELLECTUAL

+999 > P EEI                      P     E
      PEI  E I                   P P    E
     PI  P  E  I                P   P  E
    PE    P  E  I              P       E
   IP      P  E  I             P     EP
EP          P  E  I           P     E  P
0===========================P=====E====I
              P  E  I   P       E    I
               P  E  I P      E     I
                P  E  P      E     I
                 P  E I     E     I
                  P P  E  IE    I
-999 >             P    E  I I     -999

                              !     !    !
                              P     E    I
                             23    28   33
                           DAYS  DAYS DAYS
---------------------------------------

.......................................

It takes more than 58 years for all
curves to meet at birthdate ZERO again!

.......................................


0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-

BIORHYTHM CYCLE FOR  - Geoff Allen

    STARTING DATE IS 09/10/1988
 YOU HAVE BEEN ALIVE      6574 days !
 Your 23 day PHYSICAL value is    -887
 Your 28 day EMOTIONAL value is   -974
 Your 33 day INTELLECTUAL value is 971
  VALUES go from +999 to -999 & back.
               * * * *
*The PLUS numbers are your good days.*
 *The MINUS numbers are soso days.*
Between +100 and-100 are CRITICAL days.

To add interest, the following numbers
have been changed to appropriate words.
Your VERY GOOD days are marked  'TOPS.'
Your CRITICAL Days are marked   '****.'
VERY BEST DAYS when ALL cycles  'TOPS.'
BE-CAREFUL Days when ALL cycles '****.'
0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0
            * * * * * * *
  D A T E   PHYSI-  EMOTIONAL INTELL-
 Mo. Da. Yr. CAL               ECTUAL
++++++++++++++++++++++++++++++++++++++
 9   10  88   Okay      Good     TOPS
 9   11  88   Soso      Okay     TOPS
 9   12  88   Weak      fair     Okay
 9   13  88   ****      Soso     Good
 9   14  88   Weak      Punk     Soso
 9   15  88   Soso      ****     Fair
 9   16  88   Okay      Glum     Punk
 9   17  88   Fine      Able     Dumb
 9   18  88   High      fair     Blah
 9   19  88   TOPS      Okay     Blah
 9   20  88   High      Fine     Dumb
 9   21  88   Good      High     Punk
 9   22  88   Fair      TOPS     Fair
 9   23  88   Down      High     Soso
 9   24  88   Puny      Fine     Good
 9   25  88   Puny      Okay     Fine
 9   26  88   Down      fair     High
 9   27  88   Fair      Able     High
 9   28  88   Good      Glum     High
 9   29  88   High      Ogre     Fine
 9   30  88   TOPS      Punk     Good
 10   1  88   High      Soso     Good
 10   2  88   Able      fair     Fair
 10   3  88   Okay      Okay     Punk
 10   4  88   Soso      Good     Down
 10   5  88   Weak      -974     ****
 10   6  88   ****      Fine     Down
 10   7  88   Weak      -974      371
 10   8  88   Soso      Good     Fair
 10   9  88   Okay      Okay     Good
 10  10  88   Fine      fair     Good
 10  11  88   High      Soso     Fine
 10  12  88   TOPS      Punk     Fine
 10  13  88   High      ****     TOPS
 10  14  88   Good      Glum     TOPS
 10  15  88   Fair      Able     Okay
 10  16  88   Down      fair     Good
 10  17  88   Puny      Okay     Soso
 10  18  88   Puny      Fine     Fair
 10  19  88   Down      High     Punk
 10  20  88   Fair      TOPS     Dumb
 10  21  88   Good      High     Blah
 10  22  88   High      Fine     Blah
 10  23  88   TOPS      Okay     Dumb
 10  24  88   High      fair     Punk
 10  25  88   Able      Able     Fair
 10  26  88   Okay      Glum     Soso
 10  27  88   Soso      Ogre     Good
 10  28  88   Weak      Punk     Fine
 10  29  88   ****      Soso     High
 10  30  88   Weak      fair     High
 10  31  88   Soso      Okay     High
 11   1  88   Okay      Good     Fine
 11   2  88   Fine      -974     Good
 11   3  88   High      Fine     Good
 11   4  88   TOPS      -974     Fair
 11   5  88   High      Good     Punk
 11   6  88   Good      Okay     Down
 11   7  88   Fair      fair     ****
 11   8  88   Down      Soso     Down
 11   9  88   Puny      Punk      371
 11  10  88   Puny      ****     Fair
Happy Days


0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0

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C64

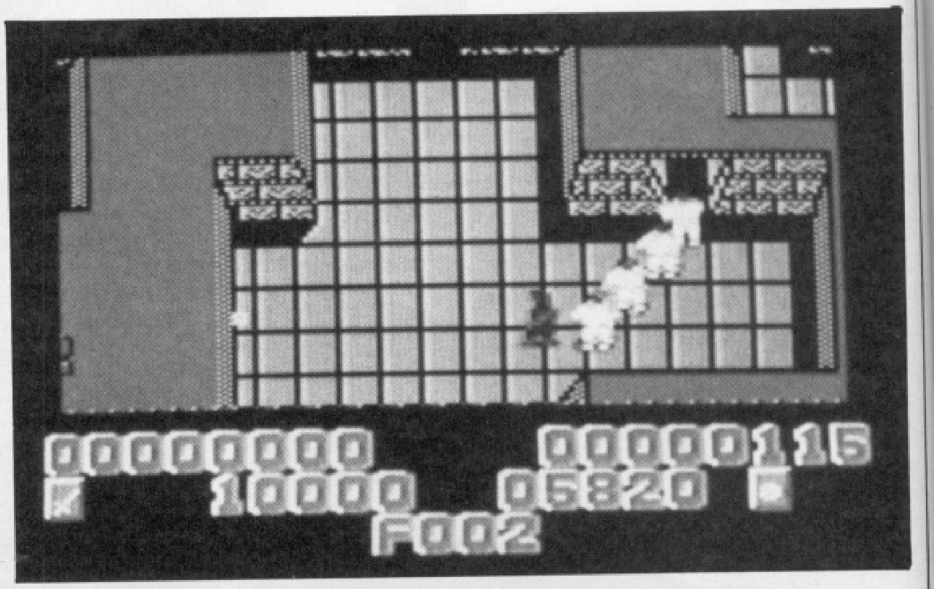
NAFF

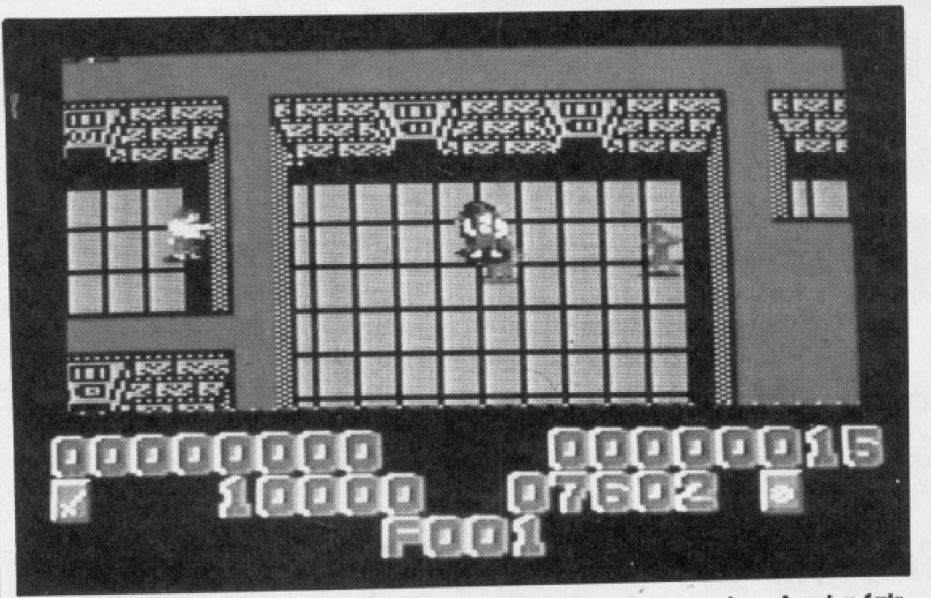
Shackled

US Gold

Shackled is a conversion from an arcade machine, though I have yet to see it. For those of us unfamiliar with the coin-op, the term 'Gauntlet Clone' should give some idea of its style. Your friends have been captured and imprisoned thoroughout a complex of 112 dungeons; evidently you are a very popular person. You set out to rescue them, accompanied by an optional second player.

Player one takes control of a green blob of unknown gender with stumpy limbs. Player two's character is a similarly portly chap. The mazes are viewed from above with an imaginative grid decorating the floor. Doorways lead to new passages and chambers. Some chambers could contain your friends, others house gangs of vicious karate experts who use their speciality move: the 'energy sap' which does exactly that simply by touching you. More axemen and guards, drawn, with it has to be said the artistic style of a five year old spectrum game's assault the heroes with flying spears, swords and meat cleavers. Logically enough, a door marked 'out' leads to the next level.

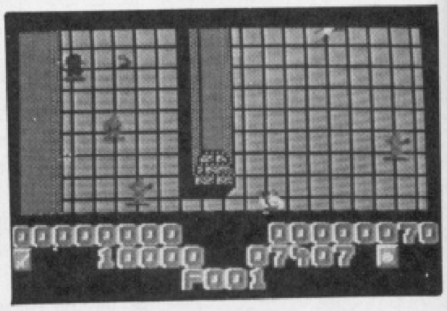




Gauntlet's graphics were barely average but at least the game was still there. Unfortunately, the primitive graphics featured in the computer series Shackled are matched by the rest of the game. With one sprite on-screen the game zips about a fair speed, but add one or two more sprites and the pace slows right down to a crawl. Throw in a bit of scrolling if that is still too fast for you. Glitches are in abundance; sprites flicker, vanish, run through walls and get stuck between non-existent barriers.

A feeble attempt at an atmospheric piece of music whines away during the game. What potential is there for a conversion of such an unoriginal and uninteresting game as this? Even if it had been well programmed it is difficult to see it creating much of a stir. A game should be fun, exciting, addictive or at the very least enjoyable. I had to force myself to take the joystick and plough through this 'game' as if it emitted some magical repellent force. If you want a good game I would advise you to look elsewhere – like at the Giana Sisters. It just shows you how surprising a place the computer games world is. In the same month, the great U.S. Gold comes out with a flop like this and a truly mega-hit like 'Giana'. You now know what's going to hit your screen, do you? Excuse me I have a date with a couple of Italian girls . . .

T.H.



Graphics: 20%
Sound: 18%
Playability: 13%
Overall: 18%
Rating: NAFF
Price: £9.99 (c)
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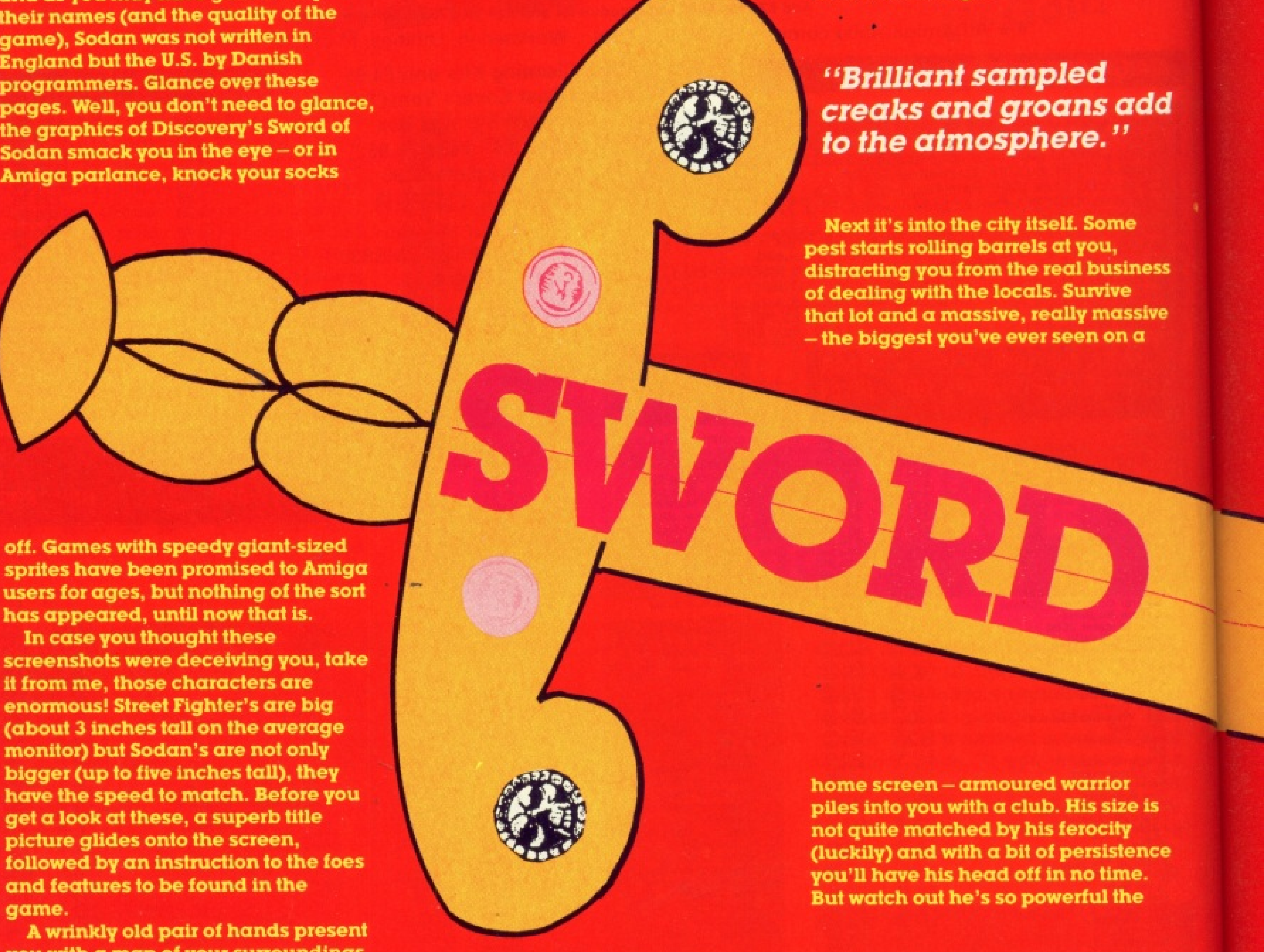
SWORD



Right, now you have recovered from being amazed by the screenshots, let me tell you about the game. Soren Gronbench, Bakager Carsen, Julian Lefay and Rick Ross are the names behind it all, and as you may have guessed by their names (and the quality of the game), Sodan was not written in England but the U.S. by Danish programmers. Glance over these pages. Well, you don't need to glance, the graphics of Discovery's Sword of Sodan smack you in the eye – or in Amiga parlance, knock your socks off. Games with speedy giant-sized sprites have been promised to Amiga users for ages, but nothing of the sort has appeared, until now that is.

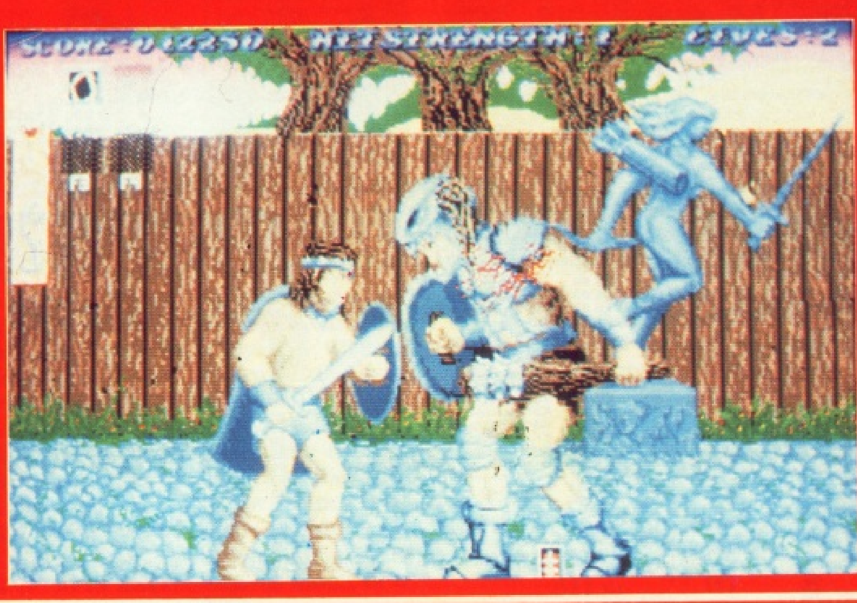
In case you thought these screenshots were deceiving you, take it from me, those characters are enormous! Street Fighter's are big (about 3 inches tall on the average monitor) but Sodan's are not only bigger (up to five inches tall), they have the speed to match. Before you get a look at these, a superb title picture glides onto the screen, followed by an instruction to the foes and features to be found in the game.

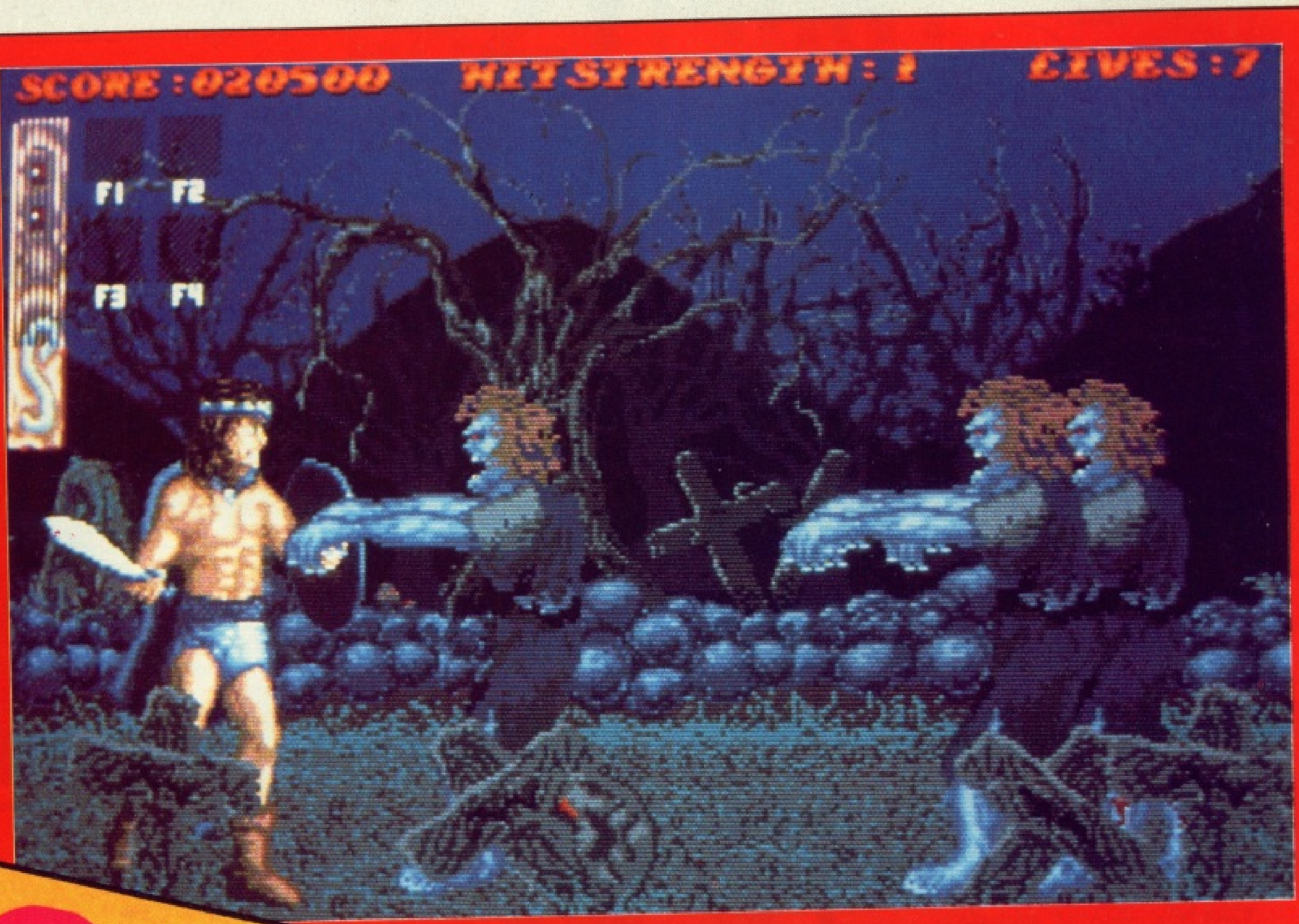
A wrinkly old pair of hands present you with a map of your surroundings, your position indicated by a small arrow. You start at the gates of the old city. As you approach, the townfolk come at you, poking and stabbing viciously with their spears. Your attacks need to be quick and precise to avoid their flesh-piercing points. Each of the guards take a number of hits before falling by the wayside, and a helpful strength meter accompanies them all; so at least you know how far you have to go. Just like an arcade machine, Sodan uses this first level to teach you the basics of the gameplay. A short paragraph fills you in on the story, whilst a sampled "More hits required for each enemy" accompanies your first successful blow.

Once through the gates you find yourself on the wrong side of a booby-trapped bridge. Sets of spikes systematically crank up from the bottom of the screen, fortunately quite predictable and not too hard to dodge. Brilliant sampled creaks and groans add to the atmosphere. Another soldier guards the opposite end of the bridge.

> *"Brilliant sampled creaks and groans add to the atmosphere."*

Next it's into the city itself. Some pest starts rolling barrels at you, distracting you from the real business of dealing with the locals. Survive that lot and a massive, really massive – the biggest you've ever seen on a home screen – armoured warrior piles into you with a club. His size is not quite matched by his ferocity (luckily) and with a bit of persistence you'll have his head off in no time. But watch out he's so powerful the





OF SODAN

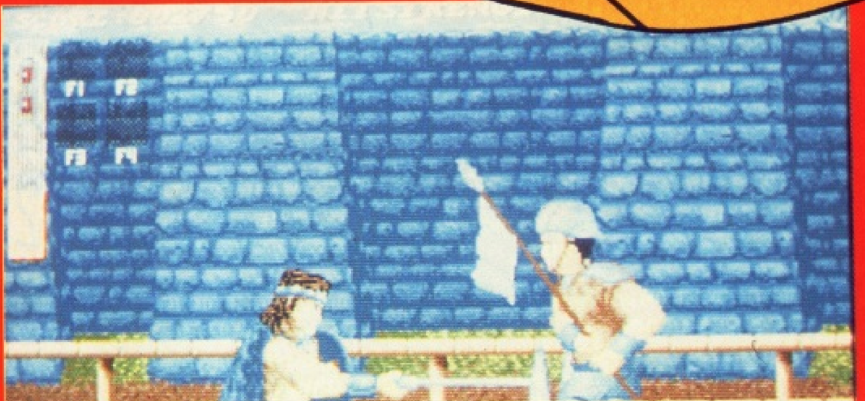
Discovery Software

slightest thump from his club puts you down and out.

> *"With each level more and more hazards are thrown at you, flames streak along the ground, walls slam down from the heavens and loads of surprise traps crop up all over the place."*

Now you take a stroll through the forest, the least impressive of all the scenes. Thugs with multi-coloured hair and clubs look very out of place, though the big stumpy reptiles are more along the right tracks.

The spookiest of all the levels has to be the one set in a graveyard. Zombies climb up through the turf, zapping you with magic beams.



cont. on next page

continued from page 84

SWORD OF SODAN

SODAN
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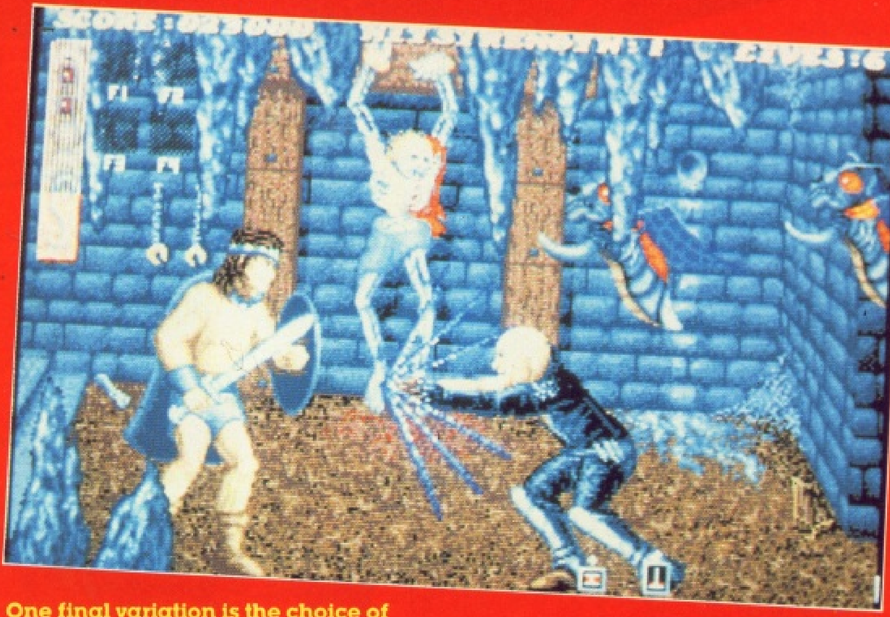
Three overlapping layers of parallax scrolling give the whole scene real depth. All the time, lightning flashes in the sky, werewolves howl and our hero grunts with every injury. Later on you are skewered on yet more spikes (have we discovered one of the programmers' kinky fetishes here?), frazzled by bubbling lava and generally given a hard time. I would love to tell you about all the surprises further into the game, but you can find them out for yourselves.

Throughout the adventure you have three attacking moves and although you carry a shield it never comes into use. Occasionally an enemy will leave behind a magical pot. Collecting these sparks off a dramatic sound effect and gives you an extra life, temporary invulnerability or increased strength. Each of the levels varies enormously, not only in graphics but in the ememies and traps that await you. Outside the city gats, passing the guards is a simple matter of ducking their thrusts and getting in quick little jabs with your sword. However, with each level more and more hazards are thrown at you, flames streak along the ground, walls slam down from the heavens and loads of surprise traps crop up all over the place.

With all that attention paid to the graphics, you might assume the sound would take a back seat. You could hardly be more wrong! Superb music plays along with the visual effects between games. Some levels have a piece of backing music and all have some of the best sound effects ever heard in a computer game, they would be exceptional even by coin-op standards.

Detail is another of Sodan's high points. In many games scrolling backgrounds are often a repetitive patchwork of small features. Those of Sodan are decorated with items such as the statue on the third level, decomposing bodies in the castle and fine details like the animated ants on the anthill found in the forest.



One final variation is the choice of play either the macho warrior or a very capable female.

The current going rate for Amiga games is not something I am very satisfied with at the moment, but Sword of Sodan is one game that I will not call over-priced. For twenty five pounds you get eleven levels of highly atmospheric fighting fantasy that must be the closest thing to a state of the art coin-op on the Amiga. Just how long it keeps you glued to your joystick depends on your sword swinging skills, but however hard or easy you find it to master, Sword of Sodan will not be relegated to the back of the diskbox for a long time to come (if ever!). If you buy one Amiga action game this year, this has got to be it.

T.H.

Graphics: 9
Sound: 9
Playability: 9
Value: 9
Price: £24.95

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continued from page 40 **Artificial Intelligence**

```
500 REM patient talking about technology
504 IF tflag=0 THEN PRINT:PRINT"Modern technology, it worries me how
506 IF tflag=0 THEN PRINT"much people talk about it.":PRINT
508 IF tflag=0 THEN PRINT"Still, you've started now.  Tell me more.":tflag=1:GOT
O 10
509 tn=1:GOTO 308
510 tn=0
512 PRINT:IF INT(RND(1)*100+1)>50 THEN PRINT "Hmm ...":PRINT
514 FOR i=1 TO a-1:PRINT s$(i);" ";:NEXT:PRINT s$(a)"."
516 b=0:FOR i=1 TO a
517 IF s$(i)="not" OR RIGHT$(s$(i),3)="n't" THEN b=b+1
518 NEXT
519 IF b>0 THEN PRINT:PRINT"Why is that?":GOTO 10
520 b=0:FOR i=1 TO a
522 IF s$(i)="and" THEN b=b+1
524 NEXT
526 IF b>0 THEN PRINT"One thing at a time, please.":GOTO 10
530 b=0:c=0:d=0:FOR i=1 TO a
532 IF s$(i)="much" THEN b=b+1
533 IF s$(i)="not" OR s$(i)="little" THEN c=c+1
534 IF s$(i)="too" THEN d=d+1
536 NEXT
537 IF d>0 AND b>0 THEN PRINT"Excess is dangerous.  Cut down.":GOTO 10
538 IF d>0 AND c>0 THEN PRINT"You think so, do you?":GOTO 10
539 IF d>0 THEN PRINT"Too much or too little, too bad.":GOTO 10
540 b=0:FOR i=1 TO a
542 IF s$(i)="calms" OR s$(i)="soothes" THEN b=b+1
544 NEXT
546 IF b>0 THEN PRINT"Then it's a good thing.":GOTO 10
550 b=0:FOR i=1 TO a
552 IF s$(i)="annoys" OR s$(i)="angers" THEN b=b+1
554 NEXT
556 IF b>0 THEN PRINT"Then you shouldn't do it.":GOTO 10
560 tflag=0:PRINT"What makes you say that?":GOTO 10

1000 DATA "computer",8,"video",5,"television",10,"hi-fi",5,"stereo",6
1010 DATA "cassette",8,"radio",5,"micro",5,"disk",4,"keyboard",8
```

Halls of Montezuma

One . . . Two . . . Three . . . Four . . . United States Marines Corps

Halls of Montezuma is, despite the unusual name, a wargame based on the exploits of the US Marines throughout their underfunded and perilous history. In case you know nothing about history, the title comes from the American invasion of Mexico City in 1847 and the subsequent dash to and capture of the Halls of Montezuma — the fabled emperor of the Aztecs whom Cortes conquered.

Upon opening the packaging (which is very impressive and pretty), I was greeted with a large poster containing all the maps, two cards full of flowcharts, an agreeable 100 page manual, the disk, and, something that is vital but often forgotten, labels to put on my saved game disks (very thoughtful, as I have a habit of losing all my saved games in a mountain of unmarked disks!).

Included in the manual is the usual SSG tutorial, which is normally a good way of getting used to the game, but for once I found it absolutely useless because it only guides the player through the first turn of the Mexico City scenario, and I was none the wiser after going through it about further developments. After that the manual was very helpful, and it is much better than other SSG manuals that I have read.

Included in the game are 8 scenarios, ranging from Mexico City in 1847, to the invasion of Iwo Jima in the Second World War (remember that famous picture of marines putting up a flag?) to the war in Vietnam. The manual describes these historical scenarios and the history of the marines in between, and by itself it makes interesting reading.

The game is designed around SSG's "Warplan" construction set, which has been expanded slightly and updated for Halls of Montezuma. This allows you to alter the existing scenarios and to create new ones. In reality, all this package is, is an updated version of "Warplan" with 8 scenarios created from it. This has the advantage that if you know how to play any other Warplan-based game from SSG, such as "Battles in Normandy" then you can immediately play Halls of Montezuma.

The actual mechanics of the game are as follows. The basic map is, naturally, split into hexs, and each hex can represent one of 25 different types of terrain, from beach to bluff to fortress. The basic map unit is the battalion, which occupies one hex. There are about 14 different types of battalion, with varieties like cavalry, engineer, and anti-tank. Four battalions make up a regiment, which is the smallest unit that you can control. Three or four regiments make up a division, and a division also contains three or four "spare" battalions, which can be assigned to any regiment. Commands are only given to regiments, through a series of menus.

This brings me to my first gripe with the game. It is impossible to give orders to any single battalion, or control the exact location or actions of any individual battalion. This was probably thrown in to add realism, but I would like the choice to order battalions by themselves where I want them. Another limitation of the Warplan system is that depending on the regiment's situation many commands are prohibited and impossible to make. This is also probably for realism, and as such it is fine, but it would be a nice option to order regiments to carry on to their objective, rather than stop and fight the enemy, or to attack routed units in the next hex in which they are trapped, but it is very hard to do so.

There are various forms of attack and defence that can be ordered to the regiments when they have decided to be in contact or engaged with an enemy unit, but it is often the wrong unit that you want them to attack, etc., and it is sometimes impossible to make them attack the desired unit.

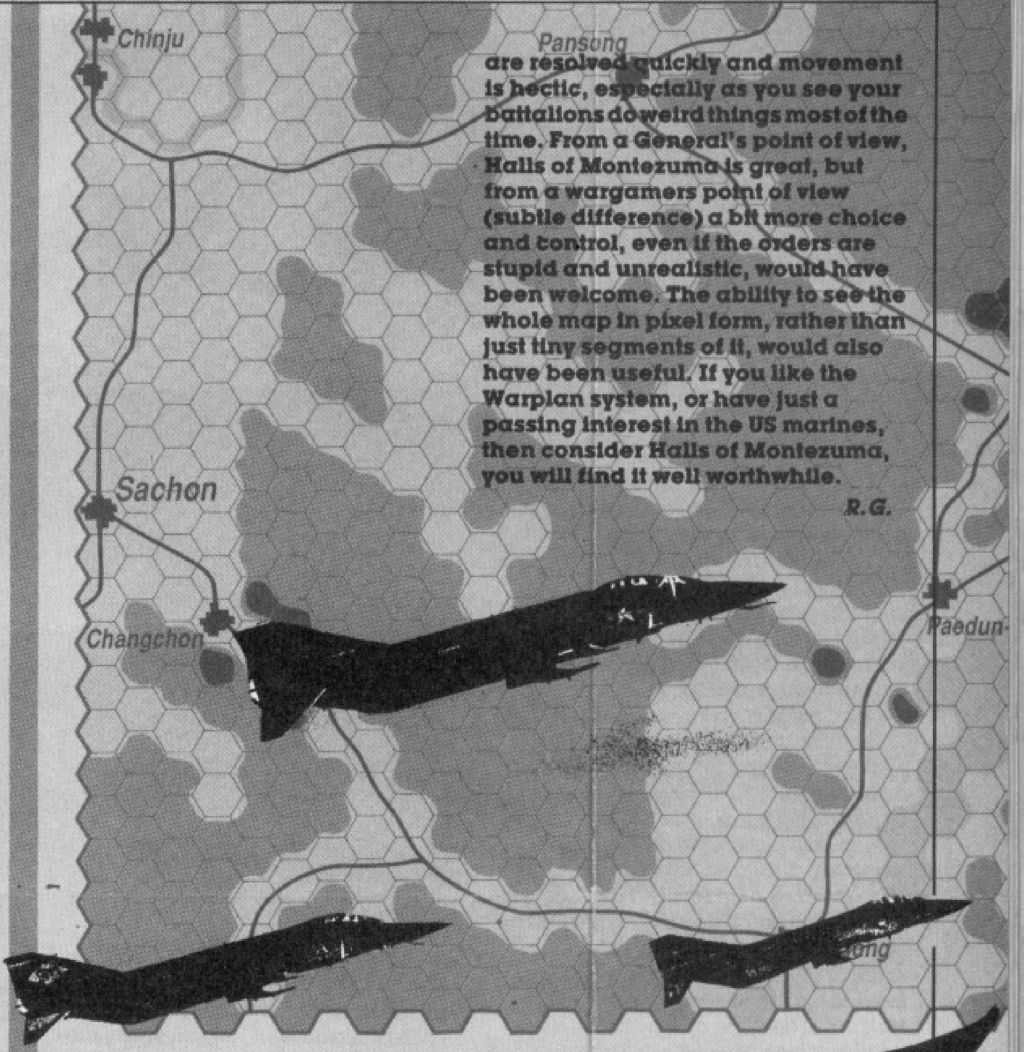
There is the usual amount of SSG variety in the game, with weather report (affects the amount of air support you can use), various varieties of troops, from green to elite, damage percentages of each battalion (which recovers if you leave the regiment in reserve for long enough), the ability to set enhanced computer player, or to give any side an advantage (of various strengths), brittleness of units and night capability.

The provided scenarios themselves are interesting and varied, each one presenting a different set of problems and thus requiring different tactics, within the limitations of the program.

Included with the Warplan design routines is a new program called Warpaint. This is an icon editor, and it allows you to change all the game icons, and create your own. Combined with Warplan, this procudes an excellent Wargame construction set, if your personal definition of Wargaming can put up with the lack of battalion control. Warplan is easy to use, and the manual is very helpful in creating your own campaigns. If you want to buy a Wargame construction set, then I would recommend getting a version of Warplan which is based on the type of battles that you are interested in, i.e. the scenarious that come with it.

The final point about Halls of Montezuma is that it is fast. There are no long waiting periods while nothing happens on screen. Battles are resolved quickly and movement is hectic, especially as you see your battalions do weird things most of the time. From a General's point of view, Halls of Montezuma is great, but from a wargamers point of view (subtle difference) a bit more choice and control, even if the orders are stupid and unrealistic, would have been welcome. The ability to see the whole map in pixel form, rather than just tiny segments of it, would also have been useful. If you like the Warplan system, or have just a passing interest in the US marines, then consider Halls of Montezuma, you will find it well worthwhile.

R.G.



Hue
Hue
ARVN Compound
Tayloc Airfield

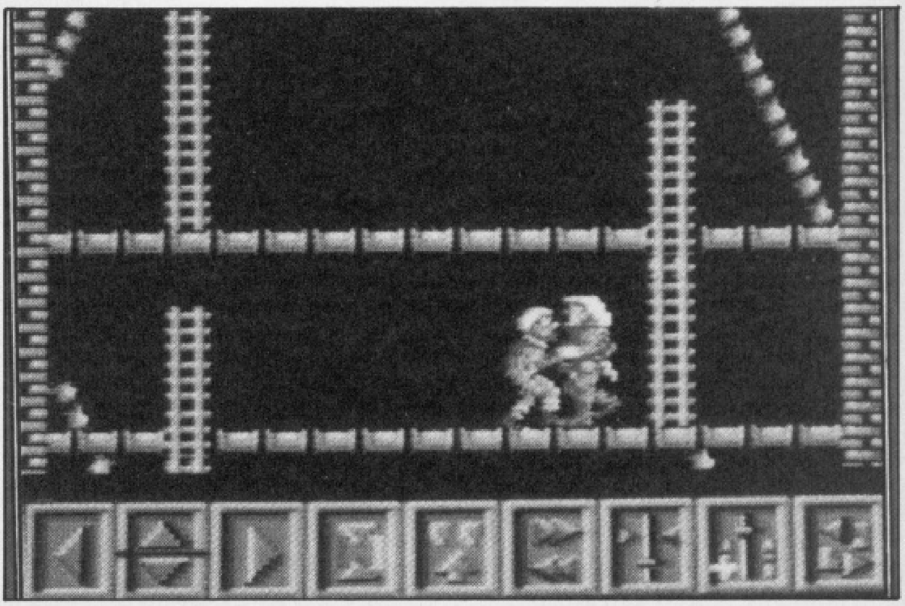
Detail	76%
Complexity	70%
Playability	85%
Overall	77%

C64

DODGY

BARBARIAN

Melbourne House



As Psygnosis are a dedicated 16-bit software house with an excellent reputation for intelligent use of the Amiga's abilities, a 64 version of Barbarian looked unlikely. That changed when Melbourne House bought the rights for the 8-bit conversions, the result of which has just been realised.

In its original format it had you taking the role of Hegor, the monster mangling barbarian, venturing into the underground world of Durgan and doing battle with the many superbly drawn enemies. Commodore 64 users get all that bar the superb graphics and sampled sounds. It is unfortunate then, that most of the original's appeal came from the urge to see the next wolfman, zombie or whatever, and unfortunately the 64 just does not have that graphical power.

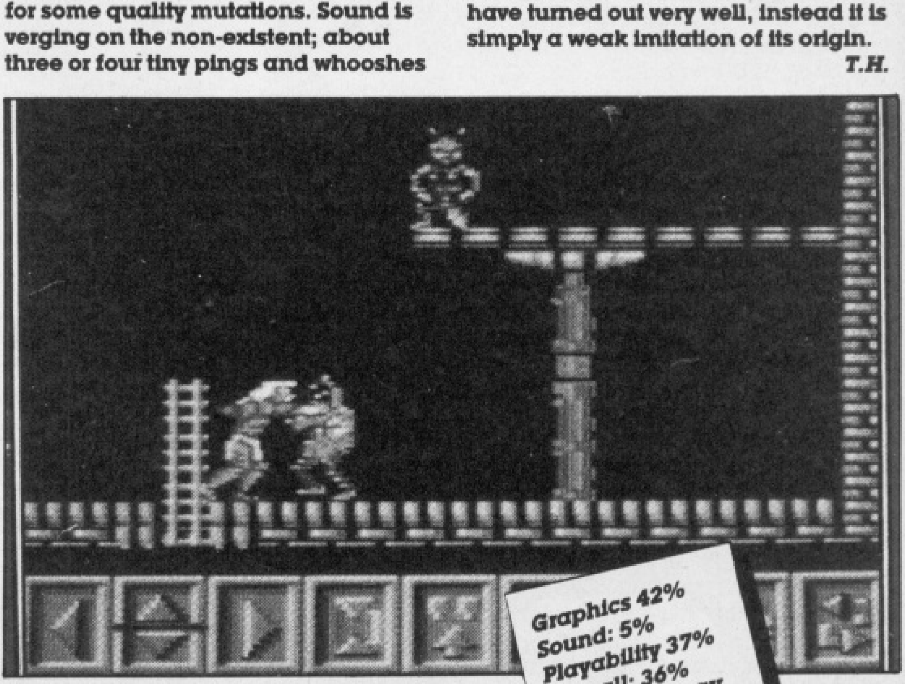
> *"You start out in a small marsh with a couple of booby-trapped spikes to your left and an armless beast to your right"*

A row of icons is used to control Hegor's actions, something that was not ideal on the original mouse-driven game, and is even more awkward with a joystick. Up, down, left, right, stop, jump, run, attack, defend and flee are your main commands. A second strip controls your inventory. You start out in a small marsh with a couple of booby-trapped spikes to your left and an armless beast to your right. A tap of the attack icon is all that is needed to send him back to hell.

Further into the game, stone slabs fall from the ceiling without warning and little goblins shoot arrows from trapdoors. Most of the backgrounds are plain grey brickwork and ladders which look pretty drab. Some of the sprites have been reasonably re-drawn, Hegor for example, but others just look a mess. Of course they cannot hope to match the Amiga graphics, but surely they could have gone creatively deeper and bolder. Take a look at Palace's Barbarian II for some quality mutations. Sound is verging on the non-existent; about three or four tiny pings and whooshes are all that can be heard. Almost the entire game is played in silence.

If you had not heard of the 16-bit versions you would expect Barbarian to be a budget title. It looks, sounds and plays like one, which is a shame. With some alterations to the game's design to suit the 64, Barbarian could have turned out very well, instead it is simply a weak imitation of its origin.

T.H.



Graphics 42%
Sound: 5%
Playability 37%
Overall: 36%
Rating: DODGY
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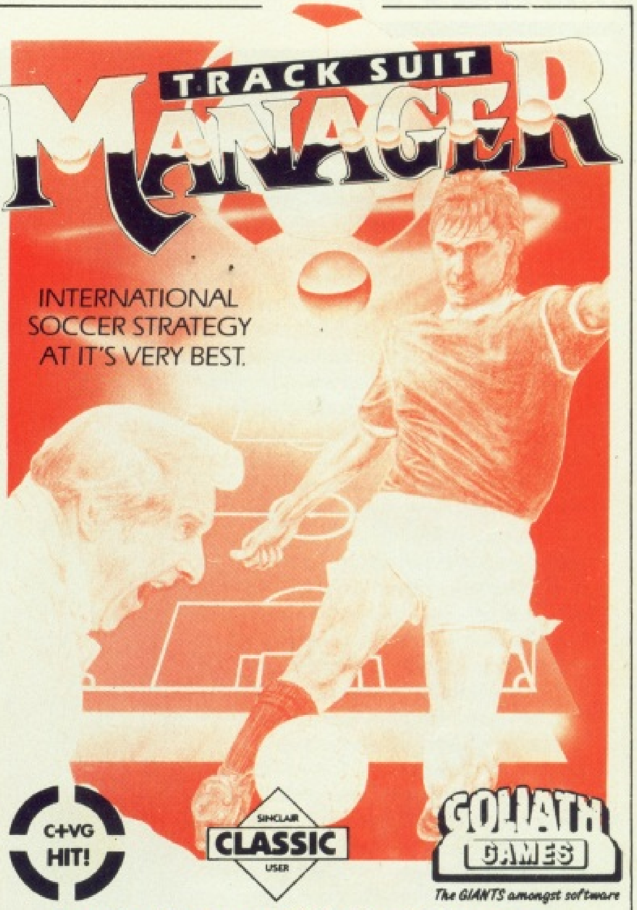
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COMMODORE 64, SPECTRUM

Pools of

For the past six months ST owners have been looking down their noses at everybody who owns a different computer. The reason for this is simple – they are the only people who can play *Dungeonmaster*, which, according to public opinion, is probably THE best computer game in existence.

However, the time of reckoning is at hand, The C64 owners with their (not so) humble 8 bit machines have something that matches and, in some cases surpasses, the aforementioned game, Pools Of Radiance has arrived and at the moment it is only available on Commodore!!

Radiance, the brainchild of a superteam, combines the role-playing expertise of TSR, the programming skills of SSI and the production talents of US Gold. Based on the best selling *Dragonlance* series, the game is the official computer adaptation of the Fantasy Role Playing game *Advanced Dungeons and Dragons.*

AD+D, as it is known has had phenomenal success as a tabletop game. In the ten yeas that it has been released, AD+D has become one of the top selling games in the world, outselling even the likes of Monopoly. It was only time, and the availability of the right programmer, that stopped AD+D being computerized in the first place. The time is now ripe, as Fantasy Role Playing via computer is expanding enormously, then Chuck Kroegel, who programmed such other classic games as Phantasic and Wizardry, became eligible for the project.

Kroegel has in fact pulled all the stops out and delivered a classic game that he can be proud of. Radiance sticks very closely to the table top rules and this makes the game unique.

The game is set in the Forgotten Realms, a wild and dangerous land at its best. You start off in a town called Phlan, which is located in a area called Moonsea. Phlan has a rich, detailed history and this once proud city has now been reduced to a shadow of its former self. For a number of reasons, the city is now full of ghettos and no go areas, in which honest inhabitants fear to tread.

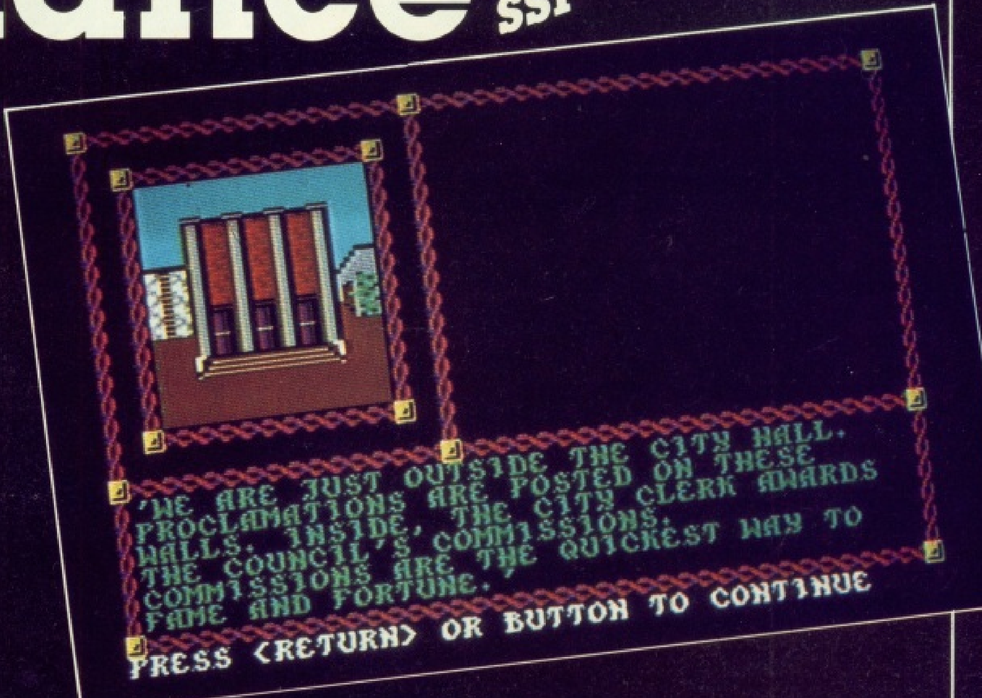
However the town council believe that Phlan can rebuild itself, as well as the surrounding countryside, so it is hireing adventurers who want to earn themself a legendary reputation, as well as vast sums of money, to help them achieve their aims, this is where you, the player, come in.

Using the detailed background and rules to the best of your ability, you use your judgement to create a party of six adventurers, which will be balanced in such a way thay they can defeat all the deadly challenges which are thrown at them. The choices available to you are awesome.

Initially you have to select a characters race, from one of the six choices available. These range from the more common humans to the rarely found gnome. Next you must select your character attributes.

Radiance

SSI



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'WE ARE JUST OUTSIDE THE CITY HALL.
PROCLAMATIONS ARE POSTED ON THESE
WALLS. INSIDE, THE CITY CLERK AWARDS
THE COUNCIL'S COMMISSIONS.
COMMISSIONS ARE THE QUICKEST WAY TO
FAME AND FORTUNE.'
PRESS <RETURN> OR BUTTON TO CONTINUE
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Attributes are judged in six categories from Strength to Wisdom. Each one has an score that is valued in between 3 and 18. The higher the number, the better the attribute. You then have to compare the attribute score your character has to the one of the four main character classes available.

You then have to compare the attribute score your character has to the one of the four main character classes available.

These are — Cleric, Fighter, Magic user and Mage. Each class has its own unique ability which can be anything to weilding a sword to casting a major spell.

The final stages are to determine your character's attitude to life, which can be one of many combinations, by giving it an alignment and giving it a name.

Once this is done you have to design your characters physical attributes. This includes choosing its hair colour, pose, weapons, stance, armour, build and clothes. When you have created six adventurers in this fashion, you are ready to play the game!

Your party start off a group of novices, who aim to gain experience through combat. When they enter into combat with various monsters, demi humans and so on, they obtain a certain amount of Experience Points. When a defined amount of Experience Points are gained, your characters can go to training school, where they become more proficient with their abilities and harder to kill.

Combat plays a a large part in the game, and although not over graphically exciting, it is very enjoyable because of the large variation in strategy, tactics and options available.

Other factors that influence the out come of a battle are formation, timing, weapon selection as well as the correct use of any divine or magical powers available. Your opponents are many and varied and keep you on your toes at all times.

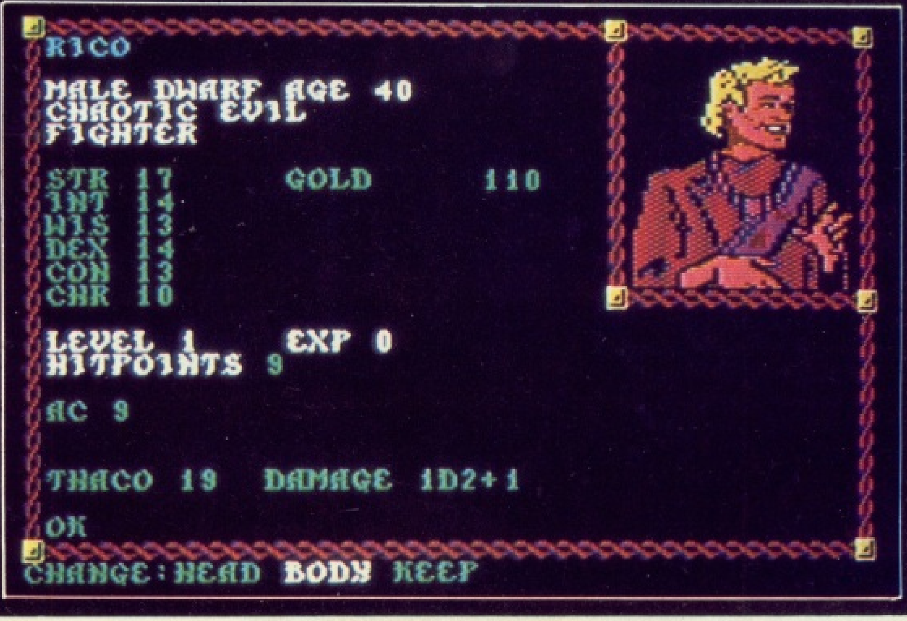
What makes the game so good in my opinion is the roleplaying aspect. You are encouraged to engage most of the beings you meet in conversation, and the reply you receive is dependant on the tone of voice in which you talk to them.

Most conversations are long, extremely interesting and in many cases rewarding. You are inevitably offered tasks to perform, all of which clear Phlan and the surrounding countryside of the trouble-making elements previously mentioned. One place to obtain regular, well-paid and experience gaining tasks is at the council buildings.

Overall, I found this game thoroughly addictive. The reasons for this are many. The storyline, which unravels piece by piece, is well planned; the options available to you are not at all restrictive and the action is fast and furious.

On the negative side, although the graphics move fluidly and are quite solid, they are still small and hard to distinguish from each other. Apart from this minor gripe I can thoroughly recommend Radiance for at least 175 hours of innovative, interesting and intriguing fun.

Price: £24.95 *W.*



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RICO

MALE DWARF AGE 40
CHAOTIC EVIL
FIGHTER

STR 17        GOLD       110
INT 14
WIS 13
DEX 14
CON 13
CHR 10

LEVEL 1       EXP 0
HITPOINTS 9

AC 9

THACO 19   DAMAGE 1D2+1

OK
CHANGE:HEAD BODY KEEP
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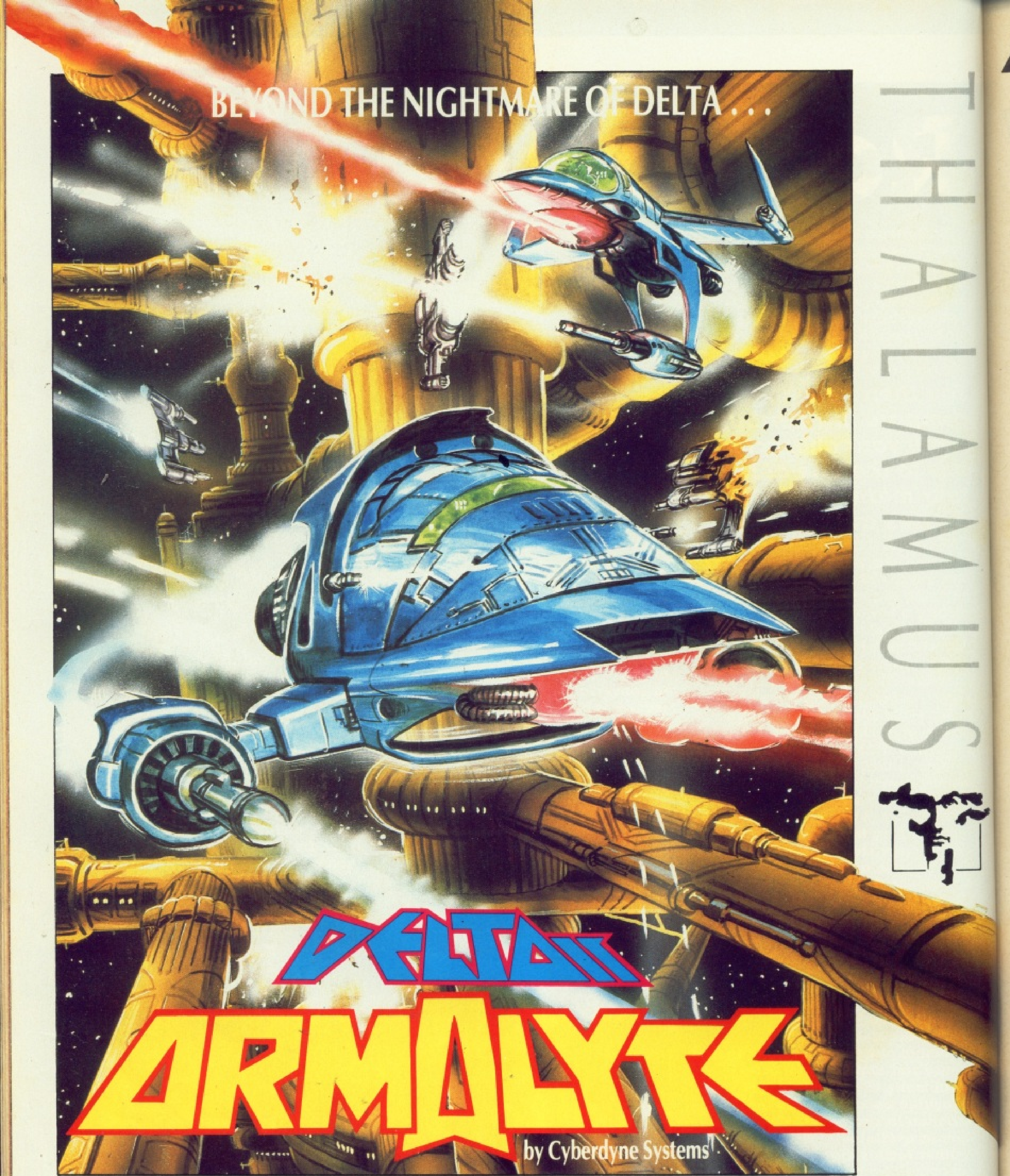

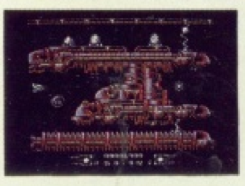

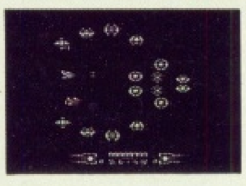

Two freedom fighters lost in eight sections of a deadly galaxy are a lone force, their own control and determination are the only things standing between them and oblivion.

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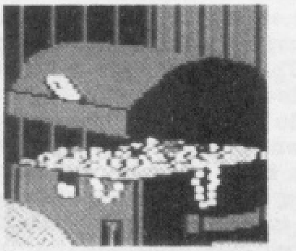
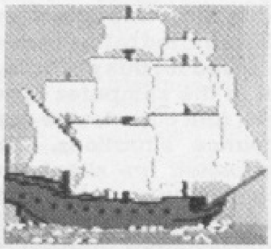
PC GAMES SPECIAL

Since the introduction of "PC clones" to the range of Commodore computers and the "PC" add-on for the Amiga, the range of software available to the Commodore PC users has increased. This increase does not only cover the use of professional and business software but also extends to the list of games available. There is an evergrowing number of entertainment programs, largely games, being released for the PC machines. The following are games that have been added to that list recently.

Pirates

This is a "PC" version of the Commodore 64 original and is produced by Microprose and as everyone knows is a deviation from their excellent flight simulator programs. The game revolves around the simulation of the swashbuckling era in the West Indies. As a player your purpose is to amass a fortune in your adventures on the Spanish Main so that you can retire as a "Duke of the Realm". There are two ways in which the simulation can be played. The first is to build up a career from scratch and the second is to take command of a famous expedition. When the career option is chosen the "character" can be defined in terms of standing in relation to your crew and the selection of a single special ability to aid you in your escapades is allowed.





The path of your career is influenced by your conduct in sea battles with other ships or on land, swordplay with opposing captains, navigation around the West Indies and interaction with Merchants, Taverners and Governors. As you visit towns new recruits will join you, however, they may also be killed in your engagements at sea or on the land.

The famous expeditions include John Hawkins in 1569, Francis Drake in 1573 and Henry Morgan in 1671. As you become more experienced, different time periods can be chosen for your adventures which covers the heyday of pirates through to their demise in the late 17th century.

The game, as always from Microprose, is well constructed and a delight to play with good use made of the PCs window displays. The package comes on two 5¼" disks with an 88 page manual and map of the Spanish Main. Highly recommended.

Star Command

The construction of this game is based on the recent classic ELITE, which is also now available for the PC. The game produced by Strategic Simulations Inc. does not have the graphic presentation of ELITE, but it makes up for this with a number of additional features that must be mastered.

The player is in control of up to an eight man team. Each member of the team can be selected from those presented by the computer. After selection each individual is trained in a wide range of subjects which depend on whether the character is to be a pilot, marine or soldier. Once the team members have been selected and trained the purchase and arming of your spaceship can be addressed. Initially only the cheapest ships can be bought and these can only be equipped with the cheaper items of weapons and shields. Care must be taken as weapons for your team must also be purchased. As you will see later both are needed and therefore a balance between ship and personal weapons must be derived.

Once commissioning of the crew and ship is complete the details of the first mission can be obtained from Star Command. These range from anti-piracy patrols (does anything change!) to the saving of mankind. As you carry out your assigned mission other spaceships will be encountered, these may be hostile or friendly and you will have to approach them accordingly. If your mission involves visiting planets, which may be for scientific, trade or intelligence reasons, you may encounter other beings. They also may be friendly or hostile and battle may be required. As you can see, your choice of weapons earlier, will have a significant impact on your success in these areas.

As the game manual suggests the games does not require hand/eye co-ordination, but it does require good tactics and strategy to overcome each mission. The game can be played using EGA graphics and loses a lot when run outside this mode. Nevertheless it is well written and makes entertaining playing. The game comes on three 5¼" disks or two 3½" disks and includes a 28 page manual. Anyone interested in S.S.I.'s challenging role playing type games will find this an excellent addition to their collection.

Reach for the Stars

This game, subtitled "The Conquest of the Galaxy", is produced by the Strategic Studies Group of Australia and released in the UK through Electronic

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continued from page 93

Arts. The format of the game is similar to that presented in various Play by Mail games and this is evident in the lack of all but the most rudimentary graphics. Nonetheless this does not detract from the playability of the game.

The game deals with manufacturing and conquest. Your home planet, and those you capture, can manufacture various kinds of spaceship, which are used for battle and transport, or support systems for the planet itself. The game is always played by four with any combination of humans and computer players possible. The game then consists of rounds which alternate between Production and Movement and Movement Only. In all cases the communication with the computer is by use of windows and function keys. Using these windows it is possible to send scout ships out to other planets, plan production requirements, your task force or forces to conquer other planets, examine various star maps and battle with other players. For the production and exploration aspects of the game the computer can be asked for advice on what to do. The length of a game can be selected from between 40 and 150 rounds. However, on the last round, when a winner has been declared, an option is provided to extend the game by a further 100 rounds. Therefore, theoretically there is no limit to the length of any game. Winning the game is done by accumulating more Victory Points than other players. This is done by conquering other planets and winning battles. An Over-whelming Victory is declared when one player's total points are greater than all the others put together. Conquest of the whole universe will obviously take more than 150 rounds and if this type of approach is chosen Victory Points are of little importance.

The game is complex to play and a tutorial is provided, however, once mastered it should be quite a stimulating entertainment. The package comes on either one 5¼" or 3½" disk and includes a 32 page instruction manual. The authors state that the record number of rounds played is 405 without all the universe being conquered. So it is just as well that a game save option is provided!

Sons of Liberty

The final game is again produced by the most prolific of the simulation software houses, Strategic Simulations Inc. As usual the game is well written and is concerned with the American War of Independence (or Revolution depending on your viewpoint). The simulation is based on three battles of the campaign, Bunker Hill, Monmouth and Saratoga. Your role in the game is to command the troops taking part in the battle and you can select either the American or British forces to command. The object is to inflict casualties on your opponent which in turn earns you points. It is these points that can eventually decide who wins the game. An alternative is capture an area of the battlefield which is designated as a winning point.

Part of the battlefield is displayed on the screen at all times depending on where the action is taking place, but two maps are supplied to make visualising the whole area more simple. An interesting variation on the display is to select whether or not you can see all enemy troop positions or only those that are visible from your own troops. Therefore, in the hidden mode enemy troops behind a hill would be invisible.

The game is played by moving various troop units of the American and British forces around the field of battle. Units consist of Infantry and Artillery, but for the British there may also be Cavalry. As always the playing of SSI games is quite complex. The movement of the units depends on various factors such as Efficiency, Fatigue and Morale. The distance that a particular unit can move is dictated by the number of Operational Points that it has available. Less points are needed to travel along roads than through forest etc. Operational Points are also required to fire on enemy units, therefore some must be saved for this purpose. The firing of each unit can be left to the computer or selected by yourself. Orders to each unit can also be made of what to do in a Melee or Advance situations. When the "orders" phase is completed the simulation then takes control for the "combat" phase. This along with the results can be seen on the screen although no intervention is possible. The orders/combat phases continue until the battle is completed.

Once the basic level of the game has been mastered two more levels, intermediate and advanced, are available, here the simulation becomes more complex.

The game is not one that can be played by jumping in at the deep end and strategies must be developed to win the battles. Perhaps you should have watched the recent rerun of the TV series "George Washington" for some tuition. The package comes on one 5¼" disk with two manuals and two maps. Sons of Liberty is as all SSI games, for players who relish a severe challenge. If you can beat it you will certainly feel justifiably proud.

All four games are fine examples of what is available on the simulations market. If these particular scenarios do not interest you I am sure there will be something that will match your particular interests or historical period. Each of the games reviewed here approaches the method of simulation in a different way and it is good to see that the art of writing good quality game software is not to be restricted to only the home computer market.

L.K.

Dear C.C.I.
Dear CCI
Yours sincerely

Dear CCI
I am writing to your magazine for a number, of reasons. Firstly to thank you and your team for producing a mag that is certainly interesting to read and provides real value for money. Over here in Oz it costs around $3.50 as opposed to nearly $10 for AmigaWorld — and for myself and friends provides a lot more interest.

Secondly, on the point of piracy. In Australia, most of the software is so highly priced that very few people will buy it; the dealers even agree with this. Pirated software tends to get to this country a matter of a couple of weeks after release overseas whereas the legal copies don't arrive for a couple of months if you're lucky!

Admittedly, I have received a number of copies disks, few of which I would have paid money for anyway. However, as the good original software arrives I am buying copies for the instructions etc. Games like Bard's Tale, Phantasie etc certainly worth the money and I'll continue to buy them. Very few of the arcade games I've seen offer any more than a couple of entertainment and with the game costing a minimum of $40 this is expensive entertainment indeed. With Bard's Tale at $65, though I'm getting better value for money and I will get over 100 hours playing time from it. (Used to have a copy on my old Apple II system).

Anyway to sum up, I'll continue to buy original fantasy role-playing games at any price if they're good, but will not pay out high prices for arcade games.

The solution to piracy in Oz, which is pretty bad, is to have simultaneous release world-wide and reduce the prices to a realistic level eg. under $30 for arcade games. Then the consumer may start to buy some originals.

Okay, enough of that. On to the primary reason I am writing to you. I have contact with a few Amiga users but none of them are interested in programming this machine. Even the user groups are only interested in playing games and the like. So if anyone in England or wherever is into Assembly Language on the Amiga, I would certainly like to write to them with exchange of ideas, programming tips etc. I previously spent around 6 years programming my Apple with machine code, and have just recently started on the Amiga. I have a few demos finished with graphics, animation etc and will shortly be adding digitised sound. I would be happy to share the knowledge I have picked up with others if they are interested and maybe we can team upto write some games software etc.

Okay, this is getting to be a long letter. Thanks again for a great magazine. Write soon!
Yours sincerely
Mark Kerr, PO Box 546, Morphetvale, 5162, S.A. Australia

Dear Mark Kerr
We know we have a growing number of readers in Oz and it's interesting to hear of the high costs of software. It certainly looks as if someone is getting ripped off — and that the result is piracy and not surprising. We are printing your address so anyone who is interested can get in touch with you, let us know the results of any collaboration. Good luck!

Dear CCI
Please do you think you could mention to your readers a fanzine I have started. Do you remember when adventure solutions used to sell for £1 each, well I decided seeing that I had solved many adventures over the last five years, that I could sell them cheaper for people who can't or don't want to pay that much.

My fanzine called "Advenfoe" sells twenty solutions for only £3.20, inc. postage, and so as you can see it's non-profit making. Each solution costs only 16p each! Less than the cost of a stamp.

It doesn't deal with brand new games as I feel that people can still get enjoyment from trying to solve these themselves (although I may start a section for new games over the next few months — depending on demand for the fanzine).

However, it does deal with good games which are not too old, that people would like to finish, but have been trying to finish for so long that they have given up. I feel that people may as well get some enjoyment out of seeing the solutions, or just looking at part of the solution so that they can pass by where they are stuck.

Games that will be details in the next few months include: Deadline, Planetfall, Starcross, all three Zorks, Snowball, Emerald Isle, the Hulk, Spiderman, Eureka, Gremlins, Hitchikers Guide, Holy Grail, Golden Baton plus many, many more Infocom, Level 9, Scott Adams and other top software writers games.

The fanzine is monthly and can be attained by sending cheques/PO's for £3.20 made payable to G. Kirkham at the following address.
***ADVENFOE**, C/O G. Kirkham, 23 Hope Street, Aston-Under-Lyme, OL6 9SN.*

Dear Gordon
Here's your mention. Andy Moss is trembling in his shoes and tearing his hair out for fear he will be put out of business!

Dear CCI
I own a Commodore 64 with Disk Drive 1541 with which I use a Commodore Printer 802. My main computer activity is writing letters and reports for which I use Easyscript, and I rarely buy Computer Magazines.

This puts me in a class which is not perhaps of great interest to magazine publishers, but I was dismayed when in search of a little light variation I read the above-mentioned article and tried to input the program.

My 64 will not so far as I know mix upper and lower case in the input mode, and yet your program was so printed. Always the optimist, I tried none the less, and found on repeated attempts that an error in line 60 was thrown up, depite the most careful checking on my part to ensure accuracy.

cont. on next page

continued

I realise that programming is not my strong point, but I would welcome your observations.
Yours faithfully
John Beaumont, Southwell

Dear John
The mixture of upper and lower case is a result of the printer that is used to list out the programs. Although I regularly use my 64 for work such as this I do not have ready access to a Commodore printer (not usually the prettiest of outputs, anyway)!, and in cases like this I always keep two copies of the program. One is for my work on the 64, and the other is on an Amstrad PCW and is purely for listing out the program. The Amstrad always likes to put Basic keywords in upper case and everything else, unless specified, in lower case, and hence the resulting printout. To enter it on the 64, press the shift and CBM Logo keys to get into upper/lower case, then enter everything in ordinary mode unless you have to use the shift key (e.g. typing quotes -") or where the computer is printing a comment (e.g. PRINT "I am printing a comment"). The quotes and the initial "I" in the sentence require the shift key, everything else does not. The screen dump of a sample conversation is Amstrad generated as well, hence capitals on Inputs. Just type everything in ordinary on the 64, as I do myself when testing the program before saving it and updating the Amstrad version ready for printing and sending to CCI Towers. I hope that sorts out the problem for you.
All the best
Pete Gerrard

Dear CCI
Now that I am to using a computer and new to your magazine "Commodore Computing International" which I have only been buying for the past 2 months.
I'm very disappointed by the fact that you totally disregard the Commodore 16+4 and its users. I see now Games Reviews or helpful listing or hints and software any where in the last two copies of your magazine.

I have only just purchased my computer to start learning from scratch. Could you please tell me if I've landed myself with some extinct computer because if CCI does not want anything to do with myself or my 16+4 then who does?

With the right help now I might even move up to a 64/128 even Amiga.
Yours a worried beginner
Mark Stone, Birmingham

Dear Mark
Perhaps we ought to have a recorded message about C16/plus 4's. We do not have any control over software houses. They decide what they can make money on — not us! The fact that you have only just bought your C16/Plus 4 is probably not going to influence them much! They perceive it may not be true but they think it is! — that they'll get more profit out of other computers. CCI can only cover what exists. We try to get helpful hints and programs for both machines and have published them in the past. We will if we get them, print more. But don't ask us to review new 16 plus 64 games. Right now they don't exist!

Dear CCI,
While reading your August edition I spotted a review for the C16 so I quickly rushed to it. It was Ikari Warriors and I was amazed you only gave it an overall of 69%. I would have given it:

Graphics:	85%
Sound:	80%
Playability:	90%
Overall:	85%
Rating:	MEGA

That's the moaning over now. I would like to say what a fantastic mag. you've got and about the last mag. that prints anything about the C16. Keep up the good work.
Yours sincerely
Mark Lennon, Sussex

Dear Mark,
Well, you're obviously an Ikari Warrior fan to give it such high scores. As for the C16 owners we're going to go on trying to help whenever we can.

Dear CCI
I didn't think I would be writing again so soon, but the last paragraph of your leading article forces me to do so. You say nobody has written lately to tell you that CCI is rubbish, surely no news is good news.

I wrote a little while ago saying that I had tried them all and yours was the best I had come across because it catered for everyone without going on too long on any one subject, and therefore boring those not interested in certain subjects.

Each time I have found one I thought was good, and I have placed an order with the newsagent, then they have altered it and I have got fed up and had to cancel it; now when I finally decide to put an order in for your WONDERFUL mag you talk about altering it, PLEASE don't do that, as I said in my earlier letter 'Stay as Sweet as You Are'.

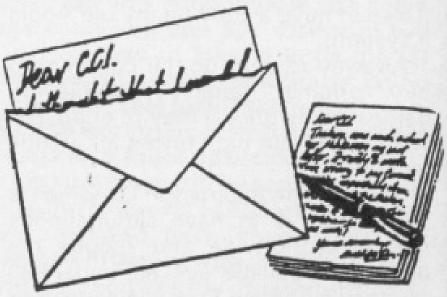
As for Peter Gerard, the answer is 'YES' if you can spare the room, he is good, he knows what he is talking about, and we are never too old to learn, at 68 I'm still learning.

As regards 'All Time Greats' by David Bishop I can't pass any comments on that as I didn't buy my Com/64 to play games on, but I'm not against those that do as I think it's very good training for the reflexes and these days the way things are moving, especially on the roads, that can't be bad. What I can't understand is why, when they buy these games, they then have to find a way to cheat them:

I've just remembered something I wanted to ask you . . . Is the OKIMATE 20 colour printer that you advertise on page 28 in the September issue compatible with the Com/64? I seem to remember when it was first mentioned in one of your earlier mags it was only suitable for the 128 or the Amiga. I can't remember which, I only know it was no good to me then but maybe they have got round that now.

Thanking you once again, I remain,
Yours most sincerely,
Jack Mullowney, Cheshire

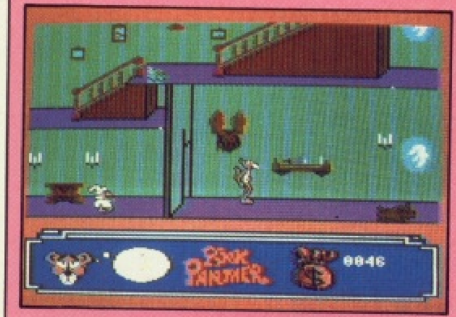
Dear Jack Mullowney,
Thanks for the compliments. CCI is certainly not to everyone's taste. Some people seem to want to concentrate on just one thing – games or programming. We try to cover the whole range of Commodore activity – and even some things outside that but we think of interest to you. As what we're doing seems to please quite a lot of people we don't have any intention of changing for a while yet. And you are 68? That's pretty unusual. Generally our readers are 40 + years your junior! People buy games and want 'cheat' modes because sometimes the programs are so difficult they may never reach the final screen. So they are able to jump through the levels and see everything. Then if they really want the challenge, they can play without the cheat mode (at least that's what games reviewers like Tony Horgen say). The answer to your Okimate query is that yes, this excellent little colour printer would run on a C64 but you would need a special program written to allow the interface. We don't have one but no doubt one of you brilliant CCI program creators out there can do it . . .

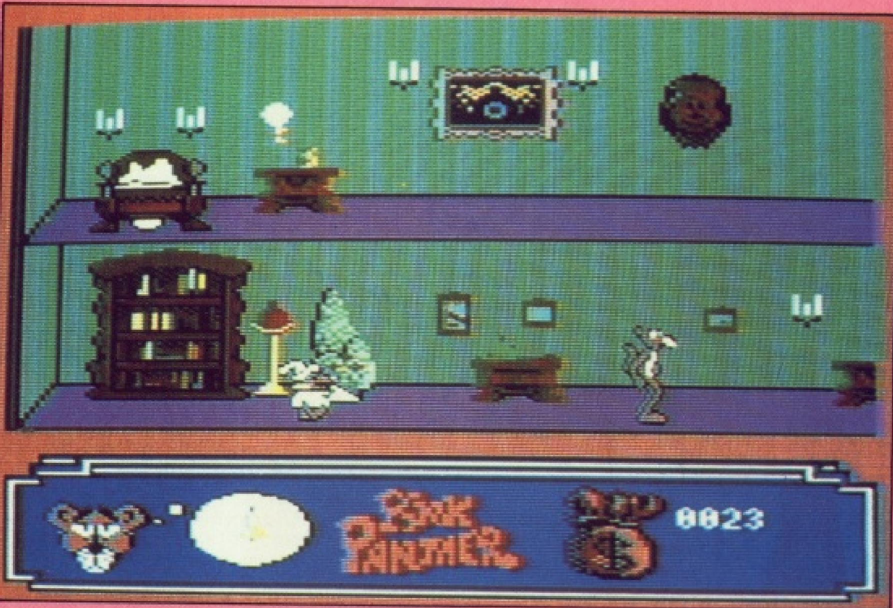


C64

Naff

Pink Panther





Gremlin

Every so often, a real blockbusting game is released that is on everyone's lips for months before and after it arrives. For every one of these, there is also an equally unimpression game that many take months to come, but disappears overnight. Which category does Pink Panther fall into? Sadly, the latter.

Once loaded, the game shows a small Pink Panther at the bottom of the screen. Above him is a shop, to the left is a sign reading "Jobs" and to the right a desert island. Whatever you do, don't make the mistake of walking over to the island. A picture of Pinky on the beach loads and you are forced to reset and load the whole thing again!

Your goal is to get a job as a butler and rob four mansions in order to pay for your holiday on that desert island. Entering the shop allows you to buy the equipment and clothes required for each job, the higher levels demanding more expensive goods. The first asks only for a top hat, but for level four you need a car. Next you can chose your level and after a simple interview you can get on with the job.

As luck would have it, your masters are all sleepwalkers. This complicates the robbing of the houses, because if your master should bump into something on his travels you will be caught red handed. You have a number of tools and techniques for keeping him in the land of nod. Simply pushing him in the right direction, inflating a rubber panther or ringing a bell are some of the more basic methods.

One of the game's least attractive points is its extremely awkward controls. When the sleepwalker is about to bash into a wall or trip over an obstacle, the combinations of joystick position and fire button needed to select and place the right object can be infuriatingly difficult to carry out.

The game is full of annoying delays (especially the cassette version) and the 3D effect in the houses has bugs. A pathetically slow and monotonous tune that bears only the smallest resemblance to the Pink Panther theme depresses you throughout the selection screens. Inside, the music is slightly less dreary, but not by much. Pinky himself looks OK, though his two frames of animation are not enough to give fluid movement.

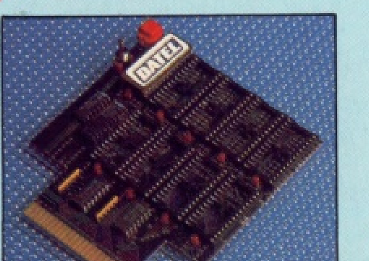
I found Pink Panther neither exciting, entertaining nor funny. A game has to be at least one of those three to be worth bothering with at all. As this was none of these, I would strongly advise you not to bother, the amount of more enjoyable ways of spending a tenner are infinite! It does seem a pity — and a mystery — that such a universally popular character as the Pink panther (and Inspector Clouseau!) could not have been made into the excellent creative level of game that Gremlin has so many times achieved. *T.H.*

Graphics: 70%
Sound: 17%
Playability: 12%
Overall: 26%
Rating: Naff
Price: £9.99 (cass).
£14.99 (disk)

DATEL ELECTRONICS

256K SUPEROM EXPANDER

☐ Now you can select from any of 8 32K EPROMs instantly.
☐ 8 sockets to accept upto 32K EPROM in each. ☐ On board operating system – no programs to load.
☐ Program your own EPROMs using our EPROM programmer.
☐ No need to have loads of cartridges – just make a selection from the Superom menu.
☐ Directory of utilities on power up.
☐ Fully menu driven on power up.
☐ Select any slot under software controls.
☐ Unique EPROM generator feature will take your own programs – basic or m/c and turn them into autostart EPROMs. (EPROM burner required).
☐ Accepts 2764/27128/27256 EPROMs.
☐ On board unstoppable reset.



ONLY £29.99

RESET CARTRIDGE

☐ Unstoppable reset button.

☐ Resets even so called "unstoppable" programs.

☐ Add pokes from magazines etc.

☐ Fits in cartridge port.

☐ Simply plug in.

ONLY £5.99

16K EPROM BOARD

☐ Accepts 2 x 8K EPROMs.

☐ Switchable to configure as 2 x 8K or 16K or off.

☐ On board unstoppable reset.

☐ Full instructions.

ONLY £8.99

DISK NOTCHER

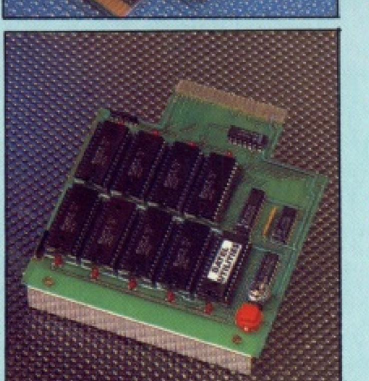
☐ Quickly and easily double your disk capacity.

☐ Use both sides of your disks.

☐ Simple to use.

☐ Takes seconds.

ONLY £4.99



DUPLIKATOR™

☐ Copies whole disk in one pass – only one drive required!
☐ Makes back-up copies in eight seconds!!
☐ Duplikator is the fastest, most efficient and easiest to use disk copying system ever conceived.
☐ Comes complete with 256K on-board ram and it's own operating system – no software to load.
☐ Makes multiple copies from one original.
☐ Full disk verification during back-up process.
☐ Copies standard software as well as errors 21-29 and upto 40 tracks.
☐ Full disk error check in eight seconds.
☐ Full disk verify against ram in fifteen seconds.
☐ A must for clubs, user groups etc. How else can you copy over 250 disks and hour for less than £100.
☐ Comes complete with on/off switch and reset button.
☐ Fitted in minutes – no soldering usually required.

ONLY £89.99

4 WAY KERNAL BOARD

☐ This board fits in place of the kernal in your 64 and accepts a 16K or 32K replacement kernal giving 2 or 4 different operating systems.

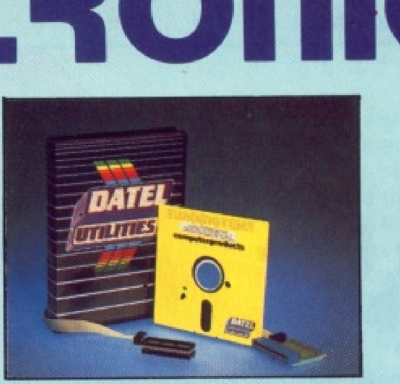
☐ Just flick the switch supplied to select between systems.

☐ This is a carrier only – ready to accept your own chip.

☐ Now you can have all your different systems available at one time.

☐ Full instructions. ☐ Fitted in minutes.
☐ 5-Way Board

ONLY £12.99



DEEP SCAN BURST NIBBLER™

☐ The most powerful disk nibbler available anywhere, at any price!

☐ Burst Nibbler is actually a two part system – a software package **and** a parallel cable to connect the 1541/1570/1571 to 64/128 (state type).

☐ What gives Burst Nibbler its power? Conventional nibblers have to decode the data from the disk before it can transfer it using the serial bus – when non standard data is encountered they are beat. Burst Nibbler transfers data as raw GCR code via the parallel cable without the need to decode it so you get a perfect copy of the original.

● Will nibble upto 41 tracks. ● Copy a whole disk in under 2 minutes. ● Full instructions.
● Regular updates – we always ship the latest. ● Fitted in minutes – no soldering usually required.
● Full or ½ tracks. ● No need to buy parallel cable if you have Disk Demon/Dolphin etc.
● Cable has throughbus extension for other add ons.

☐ Whether to choose FastHack'em or Burst Nibbler? Fast Hack'Em is unbeatable value as an "all-rounder" – with nibblers, 1 or 2 drive copy, format, file copy, 1571 copy etc. etc., so if you have a more general requirement perhaps FastHack'Em is for you. Burst Nibbler is a pure nibbler second to none, for the reasons stated. So if it's just making backups you are interested in, there is no other product to beat it.

ONLY £24.99 COMPLETE
SOFTWARE ONLY £12.99 CABLE ONLY £14.99

BURST NIBBLER PARAMETERS DISK

☐ Burst Nibbler is the most powerful disk copier available – but there are still a few programs with very complicated protected, which makes it impossible to nibble copy. The Burst Nibbler Parameter Disk contains routines to copy individual programs.

☐ Used in conjunction with Burst Nibbler even the latest highly protected programs can be backed up.

☐ The disk contains over 100 parameters including many of the latest titles. Many of the titles can already be straight nibbled by burst nibbler – but can be used with the "Super Serial Nibbler" program (supplied) by users with drives that will not support parallel copier cables such as Excelerator, Oceanic etc.

☐ Simple to use – just nibble the disk then run the individual parameter for that program and the special routine will produce a perfect working copy – in some cases it will even de-protect it!

☐ Comes complete with "Super Serial Nibbler" program for users who can't fit a parallel copier such as Burst Nibbler to their drive (Excelerator, Oceanic etc)., not as fast as Burst Nibbler but when used in conjunction with parameters its formidable!

☐ Remember – this disk is by no means a must for Burst Nibbler owners since it already copes with over 90% of Software. But for those who want everything this is it. Also for none Burst Nibbler owners you get a "Super Serial Nibbler" which together with the parameters is a powerful utility.

COMPLETE PROGRAM DISK # 1 AVAILABLE NOW ONLY £12.99

TOOLKIT IV

The ultimate disk toolkit for the 1540/1541

☐ A disk toolkit is an absolute must for the serious disk hacker. Toolkit IV has more features than most for less.

☐ DISK DOCTOR V2 – Read and write any track and sector including extra and renumbered tracks. Repair damaged sectors. Look underneath read errors.

☐ HEADER/GAP EDITOR – Decodes and displays ALL header information including off bytes and header gap. Rewrite the entire header and header gap. Renumber sectors. Also edit any sector tail gap.

☐ DISK LOOK – Sort directory. Recover lost files. Display file start/end addresses. Disassemble any file program directly from the disk to SCREEN or PRINTER including undocumented opcodes. Edit Bam. Much, much more.

☐ FILE COMPACTOR – Can compact machine programs by up to 50%. Saves disk space. Compacted programs run as normal.

☐ FAST DISK COPY – Copy an entire disk in 2 minutes or less using single 1541.

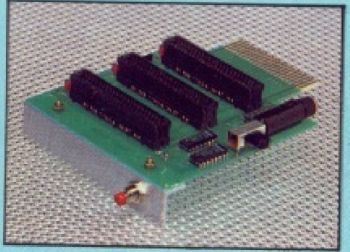
☐ FAST FILE COPY – Selective file copy. Works at up to 6 times normal speed.

☐ FORMATTER – 10 second format an entire disk or format any individual track or half track 0 to 41. Redefine any of 30 parameters to create or recreate unique disk formats.

☐ ERROR EDIT – Quickly find and recreate all read errors including extra and renumbered tracks or sectors and half tracks from 0 to 41. Even recreates data under errors and allows you to redefine any necessary parameters.

ONLY £9.99

DATEL ELECTRONICS



3 SLOT MOTHERBOARD

Save wear and tear on your Expansion Port

- ☐ Accepts 3 cartridges.
- ☐ Switch in/out any slot.
- ☐ Fully buffered.
- ☐ Onboard safety fuse.
- ☐ High grade PCB.
- ☐ Reset button.

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DATA RECORDER

- ☐ Quality Commodore compatible data recorder.
- ☐ Pause control.
- ☐ Counter.
- ☐ Suitable for 64/128.
- ☐ Send now for quick delivery.

ONLY £24.99

SMART CART ™

Now you can have an 8K or 32K cartridge that you program like RAM then acts like ROM!

- ☐ 8K or 32K pseudo ROM.
- ☐ Battery backed to last up to 5 years (lithium battery).
- ☐ Simply load the program you require – then flick the switch. The cartridge can then be removed just like a ROM cartridge.
- ☐ Make your own cartridges including autostart types – without an EPROM burner.
- ☐ Can be switched on or off board via software.
- ☐ I/O 2 slot open for special programming techniques.
- ☐ 32K version has 4 x 8K pages.
- ☐ Some knowledge of M/C is helpful – but full instruction are provided.

8K VERSION £14.99
32K VERSION £29.99

RAM DISK

- ☐ Turn your Smart Cart into a 32K RAM/disk.
- ☐ 32K of instant storage area for files/programs.
- ☐ Load/save instantly.
- ☐ Disk type commands: load, save, directory, scratch.
- ☐ Program data retained when computer is switched off!
- ☐ Full command set with instructions.

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CENTRONICS PRINTER LEAD

- ● Connect your C64/128 to a full size Centronics Parallel Printer.
- ● Suitable for use with Action Replay IV or Final Cartridge III
- ● Also works with any Software/Graphics package that has parallel driver software built-in – this includes many popular wordprocessors, databases, etc.
- ● Top quality connections – ribbon cable 1.5m long.

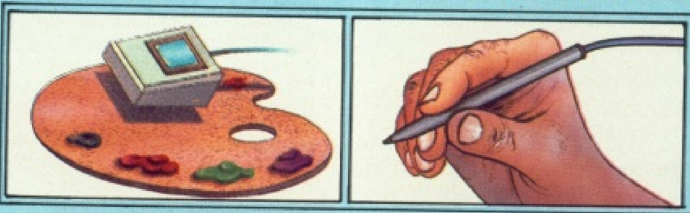
ONLY £12.99

TURBO ROM II

Turbo Rom II is a replacement for the actual kernal inside your 64. It provides superfast load/save routines.

- ☐ Loads most programs at 5-6 times normal speed.
- ☐ Saves at 5-6 times normal.
- ☐ Improved DOS support including 10 sec format.
- ☐ Programmed function keys:- load, directory, old, etc.
- ☐ Return to normal kernal at flick of a switch.
- ☐ FCOPY – 250 block file copier.
- ☐ FLOAD – special I/O loader.
- ☐ Plus lots more.
- ☐ Fitted in minutes – no soldering usually required. (On some 64's the old ROM may have to be desoldered).

ONLY £14.99



BLAZING PADDLES

A complete lightpen/graphics illustrator package.

- ☐ A fully icon/menu driven graphics package of a calibre which should cost much more.
- ☐ Complete with a fibre optical lightpen system for pin point accuracy.
- ☐ Multi feature software including:
  - ● Range of brushes ● Airbrush ● Rectangle ● Circle ● Rubberbanding ● Lines ● Freehand
  - ● Zoom mode ● Printer dump ● Load/save ● Advanced colour mixing – over 200 hues!!
  - ● Cut and paste allows shapes/windows/pictures to be saved to/from tape/disk.
- ☐ Blazing Paddles will also work with many other input devices including: Joysticks, Mice, Graphics Tablets, Trackball etc.
- ☐ Pictures can be saved from Action Replay and edited with Blazing Paddles.

Complete Blazing Paddles & Lightpen **ONLY £24.99**

Blazing Paddles available separately for **£12.99**

GRAPHICS SUPPORT UTILITIES DISKS

● **A range of utilities to make the most of your high res pictures created with popular graphics utilities or captured with Action Replays unique picture grabber.**

● SLIDE SHOW

● View your favourite screens in a slide show type display.
● Move from screen to screen – keyboard or joystick control. ● Very easy to use.

● BLOW UP™

● A unique utility to allow you to take any part of your picture and 'blow it up' to full screen size.
● Even fills the border with powerful sprite handling techniques. ● Very easy to use – simple commands
● An interesting utility.

● SPRITE EDITOR

● A complete sprite editor helps you create or edit sprites.
● Full colour display ● Animate to view movements.
● Action Replay can capture/insert sprites with any program – this editor is a perfect companion.

● MESSAGE MAKER

● Takes your favourite screen – created with a graphics package or captured with action replay and turns it into a scrolling screen message complete with music.
● Send screens to your friends with music and text scrolling. ● Simple text editor – easy to use.
● Choice of music. ● An exciting utility.
● Finished screens stand alone.

Complete disk with all four utilities

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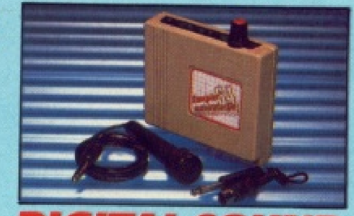
ROBOTEK 64

Model & Robot Control made easy

- ☐ Robotek 64 is a comprehensive hardware/software package which enables you to connect your 64/128 to the outside world.
- ☐ 4 output channels – each with onboard relay
- ☐ 4 input channels – each fully buffered TTL level sensing.
- ☐ Analogue input with full 8 bit conversion.
- ☐ Voice input for voice control.
- ☐ Software features:- test mode/analogue measurement/voice activate/digital readout etc.
- ☐ Excellent value! **ONLY £39.99**

including hardware/software/mic etc. (State tape or disk)



DIGITAL SOUND SAMPLER

- ☐ The new sampler allows you to record any sound digitally into memory and then replay it with astounding effects.
- ☐ Playback forwards/backwards with echo/reverb/ring modulation etc.
- ☐ Now with full sound editing module to produce outstanding effects.
- ☐ Full 8 bit D to A and ADC conversion.
- ☐ MIDI compatible with suitable interface. (I.e. Datel unit for £29.99, see ad).
- ☐ Live effects menu includes real time display of waveforms.
- ☐ Line in/mic in/line out/feedback controls.
- ☐ Powerful sequencer with editing features.
- ☐ Load/save sample.
- ☐ Up to 8 samples in memory at one time.
- ☐ Tape or disk (please state).
- ☐ Complete software/hardware package **£49.99**
- ☐ Com-Drum software is available separately at **£9.99** to turn your Sampler II into a Com-Drum system as well as a sampling system.

COM-DRUM

Digital Drum System

- ☐ Now you can turn your computer into a digital drum system.
- ☐ Hardware/software package.
- ☐ 8 digital drum sounds in memory at one time.
- ☐ Complete with 3 drum kits.
- ☐ Real drum sounds – not synthesised.
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- ☐ Load/save facilities.

ONLY £29.99 (state tape or disk)

COM-DRUM EDITOR

- ☐ 24 drum sounds supplied on disk to enable you to construct your own drum kit.
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A Full Midi Interface for the 64/128 at a realistic price

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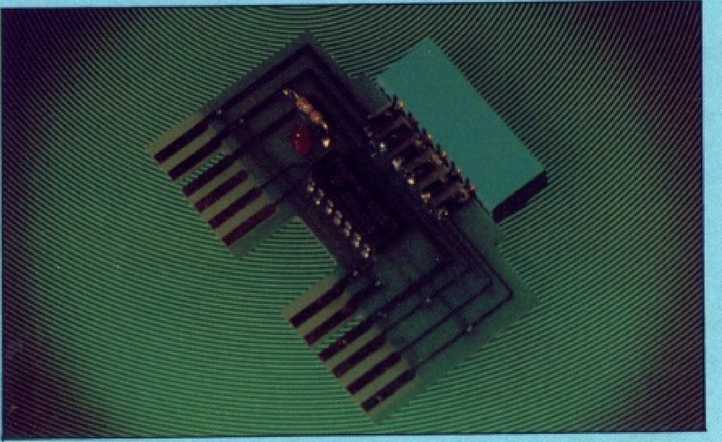
DATEL ELECTRONICS



☐ NEW CLONEMASTER™

☐ **The most effective tape to tape back-up board available.**

- Makes perfect backups of your tapes easily and effectively!!
- No user knowledge at all needed.
- On board TTL logic circuitry actually shapes the program and sends a perfect signal to the record cassette – producing a copy better than the original in many cases.
- L.E.D. indicator shows when data is being transferred to avoid excessive tape winding.
- Works with almost any program including multi-loaders, turbos and even very unusual type turbos.
- Requires access to two CBM compatible data recorders
- Simply press 'Play' on one recorder and press 'Record' on the other – that's it!
- You can even make a backup while you are loading the program.
- This is a total hardware solution – no programs to load – the results are stunning!

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- **Datasettes are available for £24.99 (see other pages)**

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- **Fully C64/128 compatible.**

☐ At last a top quality drive at a sensible price.

☐ Super slimline case

☐ External power supply for cool operation.

☐ Direct drive motor.

☐ Supplied complete with all cables – no more to buy.

☐ This drive is now probably the most compatible drive available for the Commodore. More so than even Commodores own '1541C. Much more so than other so called compatibles. In fact we have been unable to find a program including the latest that would not work. (At time of Press).

☐ **No need to look elsewhere – this is the best.**

ONLY £139.99 POST FREE

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ULTRA CRUNCHER

- **The ultimate cartridge based program compactor.**

☐ Compacts by upto 30%!

☐ More programs for disk.

☐ 3 compacting programs on one cartridge.

☐ Fast loading/saving routines – works with Disc Demon.

☐ Can even further compact AR III files!

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☐ Full DOS support including fast format.

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FAST HACK'EM™

- **Multi Module Disk Nibbler – all on one disk.**

☐ Single 1541 Nibbler – Copy a disk in 2 minutes.

☐ Auto Nibbler – Copy an entire protected disk in 3 minutes.

☐ Super fast File Copy – Under 9 seconds typically.

☐ Copes with Fat Tracks.

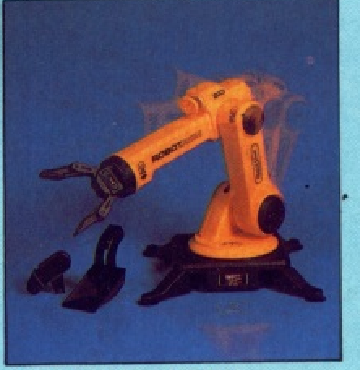
☐ Superfast Copy – Entire disk in 36 seconds with verify.

☐ Twin Drive Copier – Even faster!

☐ Plus unique "Parameters" mode. These files "Unlock" the more heavily protected programs with a parameter for a particular brand or even single program.

☐ **No other product is such a good "All Rounder" at this price its unbeatable.**

ONLY £9.99 POST FREE



☐ ROBOTARM

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- Explore the fascinating science of Robotics with this full feature Robot Arm.
- Human like dexterity – with 5 Axis of movement it is so versatile. It can manipulate small objects with amazing ability.
- Easily controlled using 2 Joysticks (any 9 pin type) or connect to your computer with our Interface + Software to give Computer/Robotic control (see Interface offer).
- Comes with Accessories including 'Finger' Jaws, Magnetic Attachment, Shovel Scoop, 4 Stabilizing Suction Base Legs, etc.
- Uses 4 HP2 batteries (not supplied) to power motor movement so uses no computer power.
- Self contained, ready to use (except batts, joysticks).

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☐ INTERFACE OFFER

- Unique Software/Hardware package to allow you to interface your computer with the Robotarm.
- Train mode allows you to store and then repeat movement sequences.
- Very easy to use.
- This Interface is not needed to use the Robotarm but interfacing with your computer has great possibilities

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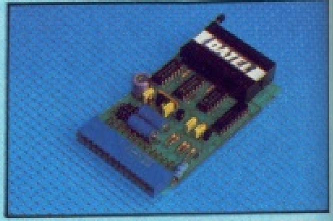
COMPLETE WITH CABLES.



EPROMMER 64™

☐ A top quality, easy-to-use EPROM programmer for the 64/128.

☐ Fully menu driven software/hardware package make programming/reading/verifying/ copying EPROMs simplicity itself.

☐ Will program 2716, 2764, 27128 and 27256 chips. 12.5, 21 or 25 volts.

☐ Fits into user port for maximum compatibility with cartridges/Superom Board etc.

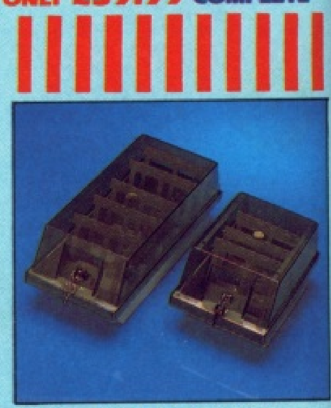
☐ Full feature system – all functions covered including device check/verify.

☐ We believe Eprommer 64 is the most comprehensive, most friendly and best value for money programmer available for the 64/128.

☐ Ideal companion for Superom Board, Cartridge Development System, our kernal expanders or indeed any EPROM base project.

☐ Comes complete with instrutions – plus the cartridge handbook.

ONLY £39.99 COMPLETE



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C64

CRISP

Soldier of Fortune

Firebird

Firebird's second release this month from programming house Graftgold is Soldier of Fortune, a development of the Ghosts 'n' Goblins theme.

The Zodiac Power Source which had kept the evil spirits of the land under control for as long as anyone could remember has now gone missing. You and an optional companion have been given the job of retrieving it. Screen one contains a lone cottage under a sky full of little exploding stars. In the cottage you find an old man who briefs you on your guest and gives you a shield and a magical weapon to take on your way. You slip out the back-door and begin the adventure.

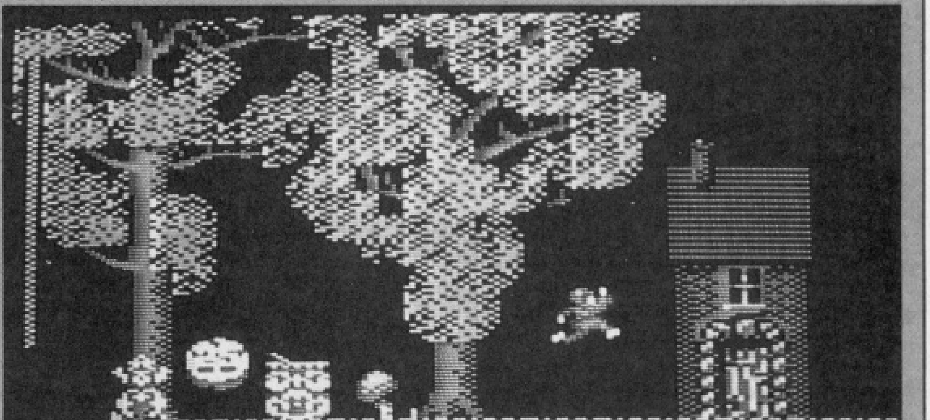
Exploring the land reveals forests and clusters of shops. Enter a shop and you are offered a choice of three objects to buy or swap. Some more explanation of what each object is, or a key in the instructions would have helped; as it is, you have to risk splashing out hard earned cash on a round, squiggly thing, or a blob with dots on it. Even after you have bought them, their uses are often still a mystery.

So how do you go about earning some cash? Since the disappearance of the Zodiac Power Source all the evil spirits have been let loose and are running wild throughout the land. Shooting these with your initially weak spells destroys them, leaving behind bouncing gold coins. Each time the coins bounce they weaken and lose value until they finally break and become useless. Collecting the gold is essential, as without it you cannot buy any of the scrolls, tablets or weapons that are needed for you to complete your quest.

Climbing ladders, ropes and the many trees can reveal more shops and monsters. Some doors lead through to new scenes, but elementals are often needed to pass through them. These can be bought (or swapped) at shops in the usual way. Unlike most two player games (Gauntlet for example), when in the dual player mode it allows one of the players to leave the screen. This means that team work is very important, as is sticking together.

Some of the houses and shops look suitably old and rickety, though the trees and sprites are a bit weak. The game's title screens are almost identical to those of Intensity and the music is pretty similar too. A nice touch is the odd silly shop which gives you a welcome break from the real business of trading and leaping around platforms.

Solider of Fortune is not just a straight Ghosts 'n' Goblins clone, but very much more an arcade adventure. This is brought about by the trading feature which can tend to be pot luck to begin with, but should start to make sense as you learn the ropes. A pleasant, though not outstanding release well worth a look for arcade adventurers. *T.H.*



PLAYER 1
1115 0 99 99 185

Graphics: 63%
Sound: 72%
Playability: 71%
Overall: 70%
Rating: CRISP

Price: £9.95 (cass)
£12.95 (disk)

'The Nimrod Hunt'
Charles Sheffield (Headline £3.50)
'Shards Of Honour'
Lois McMaster Bujold (Headline £2.99)

Comparative newcomer to the publishing world 'Headline' have what is unusual for a fairly new company, a science fiction 'list'. The paperbacks are reasonably priced from £2.50 to £3.50, and although their authors may not be as well-known as the Asimovs or the Heinleins the stories are written with flair, technical knowledge and skill which prove that, eventually, some of these writers could well be among the next generation of the 'masters'.

Take 'The Nimrod Hunt' by Charles Sheffield (Headline £3.50). The Morgan Constructs have been created to defend the outer edge of known space. They are intelligent, fast, cunning and deadly and, unfortunately for the Stellar Group in the 26th Century, they have turned 'rogue'. Their destruction is the only answer.

The teams delegated to seek and destroy the Constructs are quartets made up of one of each of the intelligent beings in the Stellar Group. A human, a Tinker composite, a Pipe-Rilla and an Angel, and a more disparate group would be hard to find.

Tinker composites are composed of fast flying, legless creatures each about the size of a humming-bird. Separately they are of minimal intelligence but massed they for a super-intelligent unit. Tinker composites possess a sense of humour which is more than can be said of the Angels who are slow moving, mindless vegetables whose outer fronds protect the central 'Singer' a computer-like brain. Then there are the Pipe- Rillas — and I wouldn't like to meet them on a dark night! Fourteen foot tall, with sectionalised bodies, looking rather like a deformed praying-mantis, they possess infra-red vision and an extra-sesnory perception of the thought processes of all the others. The humans provide what the other three lack — aggression. And it is one of the humans, Chan Dalton, who — if anyone is — is the hero of 'The Nimrod Hunt'. A former 'retard', cured by an experimental programme which turns him into a genius, he becomes the natural leader of the hunters. The interplay of the two main 'hunting' groups and the conniving and double-dealing of the operation's joint chiefs of staff, who are deadly rivals, made for gripping reading. Charles Sheffield is a name to watch out for in the future. 'Shards Of Honour' by Lois McMaster Bujold. It's unusual in that (a) the author is a woman, (b) the chief character is a woman and (c) a romance is an integral part of the story. But in case you're thinking 'What is science fiction coming to?', let me state here and now that this is no lovey-dovey, dewy-eyed Barbara Cartland-type story.

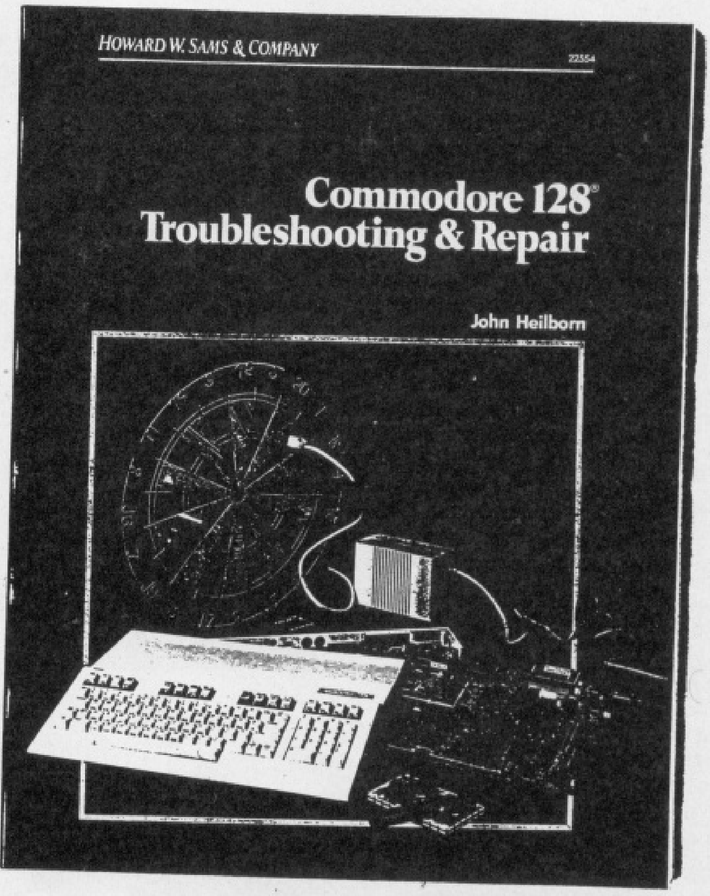
Captain Cordelia Naismith of the Betan Expeditionary Force is a straight-talking, fast-shooting, astro-cartographer who commands a star freighter and stands no nonsense from anyone. When she becomes a prisoner of Captain Aral Vorkosigan of the enemy Barrayan force she loses no time in making him realise that she is a decidedly aggressive lady.

Maybe it is the aggression that attracts Vorkosigan. Before you know it he is helping her escape. Unfortunately Cordelia is recaptured by a really nasty piece of work, a compatriot of Vorkosigan's, Admiral Vorrutyer, (you can tell a Barrayan nobleman because they all have names prefixed with 'Vor'), who after a half-hearted attempt at torture decides to rape her instead. The ordeal affects Cordelia psychologically. How she overcomes it, her reunion with Vorkosigan and what transpires from that meeting is the basis of the story.

Lois McMcaster Bujold has written a stylish novel which is certainly worth reading. **D.M.**

Commodore 128 — Troubleshooting and Repair

ISBN 0-672-22554-9



If all does not go well when you switch on your computer the usual thing to do is take it to your local dealer for repair. Thanks to the latest in a series of books from the publishers Howard W. Sams, Commodore 128

continued

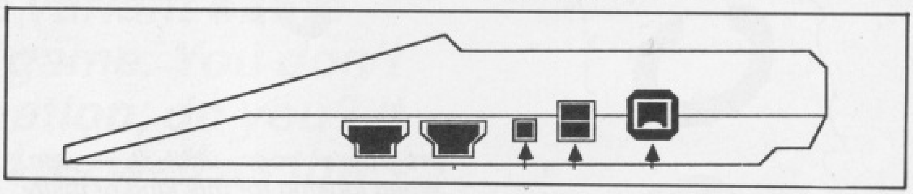
owners now have an alternative, 'Do It Yourself'.

In ***Commodore 128 Troubleshooting and Repair***, John Heilborn has put together the knowledge he has gained in the repair of various pieces of electronic equipment. His approach is designed to be used by both experienced and inexperienced users of the C128.

The book is well-constructed and makes easy reading. John Heilborn even commences with an anecdote concerning his involvement in the manipulation of electronics. The first chapter is a general description of the Commodore 128 with respect to what it does and the way in which it is done. This includes descriptions of the 128's components and how they can be identified. This is important for later sections of the book. Chapter 2 takes the description of the 128 to a much more detailed level, covering in particular the internal systems and subsystems of the machine. Chapter 3 moves on to explain how to isolate faulty components. This includes how to use the more common electronic fault finidng tools. The final of the explanatory chapters, Chapter 4, explains the logic devices used in the 128.

The next four chapters, 5 through 8, are entitled 'Troubleshooting Techniques'. Each one deals with a symptom of the fault that is causing the problem. The main areas covered area 'System doesn't work', 'Poor or no Video', 'Defective Keyboard' and 'Input/Output Problems'. Each of these is agains sub-divided to allow further identification of the area containing the fault.

what may be causing the problem and how it can be confirmed. Some of the methods used are very delicate, such as cutting the solder traces on the circuit board to check for power failure. Therefore care should be taken at all times. One thing the book recommends that the repairer adopts is 'organisation' so that what you remove from the 128 not only gets put back but also returns to its rightful place.



The final Chapter covers Preventative Maintenance and what can be done to avoid some of the more common problems. This includes some of the peripherals that may be attached to your 128 such as covering the 128s circuitry board, I/O layouts and a comprehensive glossary.

The 'Troubleshooting Techniques' are the most important part of the book, for it is these that provide the DIY repair service. Within each one is a check list of fault symptoms and faulty chips that may cause that symptom. The chapters then continue with further details of

The method used for fault finding is single path which assumes that only one part of the 128 is at fault. In this way multiple failures are found on a one at a time basis. So be aware of this if your 128 still does not work after you have replaced the first defective part.

After having read the book and followed its directives you should end up saving yourself quite a sum of money and maybe you could earn some more by repair the faulty computers of others.

Price: $19·95 L.K.

PIRATICAL THOUGHTS

continued from page 22

dealers were brought to light in this way.

I can even remember one of the very first Commodore Computer Shows, held at the Café Royal in London. I was demonstrating some games' software, sold on cassette but held on un-protected disk for convenience. Two people from a then reputable Commodore dealer approached me, and while one of them talked about the potential sales value of such games his accomplice was busying copying the disk behind my back! As soon as I realised what was happening I just whisked their disk out of the dual drive and crumpled it up. "What are you doing?!" they cried, "that's our disk!" And that was our software, go and complain to the managing director if you want to, was my reply. Minus the odd swear word, that is.

They didn't complain, surprisingly enough . . .

So everyone copies stuff, from big companies down to individual users. Obviously, copying software other than for your own backup use is illegal, but then so is making a video recording of film on television. Likewise, sell a book second-hand without prior permission of the publisher and you are also breaking the law. But whereas the latter two examples are relatively harmless (have YOU ever tried photocopying War and Peace and flogging it to make some money?!) the former is, alas, not so.

I am lucky enough to get software for review, and if I am at all interested in the product then I will invariably make a copy of it in case either the magazine or the company supplying it want it back. If I think its an exceptional piece of software that someone else might be interested in, and provided I only have to copy a tape or a disk rather than a manual, then I will probably copy it. The company who produced it could well go on to make another sale when they bring out their next product, and all that has happened is that they have lost one original sale that they probably would not have had in the first place. I have received software like that myself, and if I like it I keep an eye out for anything else that the company might produce and sometimes buy some of it. If I am not impressed I just wipe out the disk and regard it as a free disk. I occasionally do that with commercial software that I have bought. Wipe the disk out, that is, and regard it as a very expensive disk.

But back to tapes. Some reviewers are unscrupulous, and in times gone by several have been exposed as major sources of pirated software, whizzing material over to the continent for cheap duplication and subsequent re-sale in this country. Their task is made a lot easier by such devices as Freeze Frame Turbo Loader Mark XVIII, or whatever number we are up to these days. Those things are fine for people who cannot be bothered with the interminable wait for cassette software to load and who wish to have the program more readily available from disk. On the other hand, those who are seriously into piracy could well regard them as a godsend.

Personally I do not object to anyone taking a backup copy from their own use. I do not object to people handing over the occasional copy to a friend, especially if the software in question is vastly overpriced. A lot of it is: why so much difference between tape and disk software? The difference in cost between the two media is a mere bagatelle, as the saying has it.

If you have got some pirate software then good luck to you, you will probably be missing out on the packaging anyway. I condemn completely those who are out to make a fortune from piracy, that is sheer laziness on their part and shows a distinct lack of brain for being unable to come up with some decent stuff of their own in the first place.

A few views and opinions then, but piracy is a complex subject and perhaps we will come back to it at another date. Meanwhile, try not to cheat on your machine and give it the original software that you know it deserves. Well, most of the time . . .

P.G.

Code Crunchers on Compunet

Recently I promised to post a friend some logs from a bulletin board. Copying the files to 1541 format floppies I discovered that I was about to entrust an excessive number of disks to the tender mercies of the postal service (it was before the strike!). What I really needed was some way of compressing the text into a more compact form. I thought about editing out all the message headers but this would have been a most lengthy and boring job. Instead I logged onto Compunet to see what solutions were already available.

There are two basic reasons for compressing files, when archiving: to save on backup disks, and to shorten files so they are cheaper to up and download. Online time is money and demo writers usually supply each new masterpiece in compressed form to make them quicker to download.

Over the years Compunet users have built up quite a library of compression techniques with a particular emphasis on those that minimise the length of a demo program's code until it is run. When looking for this kind of utility the first stop on Compunet should be ARTAID. This area provides a variety of free software to aid users in producing demos and sophisticated Compunet frames. Separate sub-directories cover crunchers, graphics conversion, demo creators, sprite and font libraries, animation, action frames and music systems.

The "Cruncher" directory contains a variety of file compression utilities. Most work by compressing the file and then tagging a small piece of code on the beginning. When the crunched program is run the extra code decompresses the original file and runs it. Some even include a turbo loader.

However these programs are intended solely for compressing programs, usually only machine code programs, and so I had to look elsewhere.

"Ivan's BBS" (GOTO IVAN) is a relatively new area packed with public domain software and articles on a wide range of subjects. With over seven hundred pages online Cnetters should make sure they have a couple of empty disks at hand before they select "GOTO IVAN"! One of the many sub-directories contains ARC for the C64 as well as a number of useful utility programs.

Amiga or Commodore PC owners will probably be familiar with ARC. It is a general purpose file compression and library utility designed to make archiving cheap and easy. ARC can create a library file from a number of original files, usually a program and its documentation, and then compress it.

The accessory programs available in "IVAN'S BBS" include ARCAID71.SDA and PIGAID, the latter written by Cnetter, PIGLET. PIGAID provides a menu driven front-end to the utility and is a lot easier to use than ARC by itself. ARCAID71.SDA also provides a more friendly interface but with the added advantage that it allows the construction of Self Dissolving ARC files (SDAs).

To extract files from an ARC file one normally needs to run ARC and specify the relevant filenames. SDAs are ARC files that can be run like programs. When run they automatically extract each file they contain, decompress it and write it to disk. This can be used to make the downloading of large programs suites both quicker and a lot easier.

With ARC I was able to compress my bulletin board logs to around fifty per cent of their original size, halving the number of disks to be sent in the post. Next I tried ARCing Compunet frames. This proved interesting since a compression to about sixty per cent of the original size was obtained. The difference between this reduction and that for plain text files is due to the way Compunet frames are stored and transmitted.

Compunet already uses a limited form of compression called Run-Length Encoding. Where a string of identical characters appears, such as in a border graphic, they are replaced by a single instance of the character and a count of how many times it should be displayed. This partial compression is carried out by the Compunet Editor software.

Having got my logs in the post I'm now about to compress my backup disks with ARC, freeing up a lot of space, ready for more downloads from Compunet.

J.L.

MEGAMIND

+4, C64 and C16

Ron Stoate

This is a very nice variant of the mastermind-type game. You don't need more explanation, do you? It will run on the C64 as well as the +4. It can also be used with the C16 if the text of the REM lines is removed.

MEGAMPRINT

Use this only to make a printout from a C64.

Because it includes keywords alien to the C64 they cause a syntax error when this version is run on C16/+4.

MEGAMIND

This is a complete program, corresponding to the printout, which can be loaded and run on C64/+4. The program in this form is too large to run on C16.

MEGAMC16

This is the version with most REM information removed. It can be loaded and run on C64, C16 and +4.

MEGAMC16B

This is a backup copy of MEGAMC16.

Technical Notes

When MEGAMIND is loaded onto C64 the statements JOY, VOL and SOUND are converted into DATA and RETURN. This causes no problems when the program is run as they are not accessed but means that the program MEGAMPRINT is necessary to get a correct printout on C64.

When testing the programs it may be useful to know that the error message vector location (768) is redirected on C16/+4 to a short machine code routine which alters location (65298) back to Rom if there is an error during debugging. This may cause a problem if you mess around with the data for this routine after the data has already been entered and run correctly and the vector has thus been already altered. I know this because I did it myself!

Megamind is an enhanced derivation of Mastermind (the board game) for the C64, C16 and +4. In case you are not familiar with the original game, here is a brief synopsis of Megamind.

You have a choice of 4/5 columns and 7/8/9 megablobs. The object of the game is to use your skill to work out the sequence of megablobs hidden at the top of the screen. To do this you enter a row of megablobs of your choice and are told if you have the correct blob in the correct column or a correct blob in the wrong column. Each row you enter can therefore help you to find the correct hidden sequence.

The program can be loaded from disk into any of the three computers but, because of its limited memory, if you want to use the C16 you must leave out all REM information such as *** bla bla *** but keep the actual REM statements. Again because of this limited memory and the way in which the C16/+4 store strings I have had to be very strict with garbage collection – GC = FRE(0). This also explains the immortal CR$ = CR$ + CR$!

If you are using a datasette you can of course only load to the same type of machine that the program was saved from.

If disk owners do want to run the program on more than one machine then the completed program should be saved using the C16/+4 because if saved on a C64 the statements "VOL", "SOUND" and "JOY" will give a syntax error when loaded and run on C16/+4 – even though they are syntactically correct!

```
100 REM ******* MEGAMIND ***************
110 REM *** FOR C64,C16,+4 *************
120 REM *** RON STOATE '88 *************
130 REM
140 REM ** C16 OWNERS MUST MISS OUT ***
150 REM ** ALL REM INFORMATION        ***
160 REM ** BUT KEEP REM STATEMENTS   ***
170 REM ** SO GOSUBS CAN FUNCTION    ***
180 REM
190 REM ****GRAPHIC CHARAS USED *******
200 REM "[CLR] =SHIFT+CLEAR/HOME"
210 REM "[CR] =CURSOR RIGHT"
220 REM "[CD] =CURSOR DOWN"
230 REM ******************************
240 Z=1:IFPEEK(778)=23THENZ=0
250 PRINTCHR$(31)"[CLR][CR7]SET FOR";:
```

```
260 IFZ=0 ANDPEEK(56)=< 63THENPOKE55,255:POKE56,59:CLR:PRINT" C16":GOTO280
270 IFZ=0THENPRINT" +4"
280 KJ=0:B=65301:F=65305:IFZ=1THENPRINT" C64":B=53281:F=53280
290 POKEB,0:POKEF,0:REM BGND/FRAME
300 PRINTCHR$(5)"[CR2][CD4] STAY COOL !"
310 BL=2:SA=828:LN=2930
320 FORK=0TO1:FORL=0TOBL:CX=0:FORI=0TO15
330 READA:IFA>255THENPRINT"[CD2]DATA ERROR IN LINE ";LN+(L*10):STOP
340 CX=CX+A:POKESA+L*16+I,A:NEXTI
350 READA:IFA<>CXTHENPRINT"[CD2]ERROR IN LINE ";LN+(L*10):STOP
360 NEXTL:BL=26:SA=14848:LN=2970
370 IFZ=0THENSA=15872
380 NEXTK
390 LN=3250:FORL=0TO2:M2$="":D=0:FORI=0TO15:READM1$
400 IFLEN(M1$)<>3THENPRINT"DATA NOT 3 FIGURES ERROR LINE";LN+(L*10):STOP
410 M2$=M2$+M1$:GC=FRE(0):C=VAL(M1$):D=D+C:NEXTI
420 READM1:IFM1<>DTHENPRINT"DATA ERROR LINE";LN+(L*10):STOP
430 MU$(L)=M2$:NEXTL
440 CX=0:FORI=1TO9:READA%(I),J%(I):CX=CX+A%(I)+J%(I):NEXT
450 IFCX<>1280 THENPRINT"DATA ERROR LINE 3290 ":STOP
460 GOSUB1360
470 P$="":R$="":CR$="":SP$="":CD$=CHR$(19)
480 FORI=1TO17:CR$=CR$+CHR$(29):NEXT:CR$=CR$+CR$:GC=FRE(0)
490 FORI=1TO23:CD$=CD$+CHR$(17):NEXT:GC=FRE(0)
500 FORI=1TO21:SP$=SP$+CHR$(32):NEXT:GC=FRE(0)
510 FORI=1TO9:R$=R$+CHR$(168):NEXT
520 Q$=LEFT$(R$,7):T$=CHR$(168)
530 FORI=1TO14:P$=P$+CHR$(169):NEXT
540 N$=LEFT$(P$,9):GC=FRE(0)
550 W$="[SP5]:[SP9]":REM**5SPACE:9SPACE*****
560 CH$="":CJ$=""
570 PRINT"[CLR]":PRINTCHR$(5)" MEGAMIND"LEFT$(SP$,21)"MEGAMIND"
580 RW=3:CL=10:GOSUB1560:PRINTCHR$(156)
590 FORK=0TO1:PRINTM$R$R$
600 IFK=1THEN620
610 FORI=1TO12:PRINTM$T$LEFT$(SP$,16)T$:NEXT
620 NEXTK:RW=7:CL=14:GOSUB1560:PRINTCHR$(5)
630 PRINTM$;"HOW MANY[SP2]"
640 PRINTM$;"MEGABLOBS ?"
650 PRINTM$;"[CD]KEY 7/8/9 "
660 GETDU$:IFDU$<>""THEN660
670 GETE$:IFE$<>"7"ANDE$<>"8"ANDE$<>"9"THEN670
680 E=VAL(E$):C2=C1+80:S2=S1+80:GOSUB1590:GC=FRE(0)
690 RW=9:GOSUB1560
700 PRINTM$;"COLUMNS[SP2]? "
710 PRINTM$;"[CD]KEY[SP2]4/5[SP2]"
720 GETD$:IFD$<>"4"ANDD$<>"5"THEN720
730 D=VAL(D$):P1=14:P2=9:IFD=4THENP1=11:P2=12
740 C3=C1+931:S3=S1+931:GOSUB1640
750 RW=5:CL=11:GOSUB1560
760 PRINTM$CHR$(31)" KEY SELECTION "
770 PRINTM$CHR$(5) " Q[SP3]QUIT[SP6]"
780 PRINTM$        " T[SP3]TIME CHECK"
790 PRINTM$        " J[SP3]JOYSTICK[SP2]"
800 PRINTM$        " K[SP3]KEYBOARD[SP2]"
810 PRINTM$CHR$(31)" USE JOY PORT2 "
820 PRINTM$        " OR CURSOR KEYS"
830 PRINTM$CHR$(5)CHR$(32)CHR$(174)" CHOOSE BLOB"
840 PRINTM$CHR$(32)CHR$(175)" CHOOSE COLM "
850 PRINTM$"RTN/[SP2]ENTER ROW "
860 PRINTM$"FIRE[SP4]:[SP4]:[SP2]"
870 PRINTM$CHR$(31)"ANY KEY TO START"
880 GETDU$:IFDU$=""THEN880
890 GOSUB2750
```

```
900 RW=3:CL=6:GOSUB1560
910 FORI=1TO20:PRINTM$CHR$(30)LEFT$(W$,P1+1)LEFT$(W$,P2):NEXT
920 RW=4:CL=31:GOSUB1560
930 PRINTM$CHR$(5)"[SP2]RIGHT":PRINTM$CHR$(164)" BLOB "
940 PRINTM$CHR$(165)" RIGHT":PRINTM$;"[SP2]COLM"
950 RW=9:GOSUB1560
960 PRINTCHR$(158)M$;"[SP2]RIGHT":PRINTM$CHR$(166)" BLOB "
970 PRINTM$CHR$(167)" WRONG":PRINTM$"[SP2]COLM"
980 PRINTCHR$(30):GOSUB2250
990 RW=17:CL=31:GOSUB1560:PRINTCHR$(156):T$=CHR$(168)
1000 PRINTM$Q$:FORI=1TO2:PRINTM$T$LEFT$(SP$,5)T$:NEXT
1010 RW=21:CL=30:GOSUB1560
1020 PRINTM$R$:PRINTM$T$LEFT$(SP$,7)T$:PRINTM$R$;
1030 RW=19:CL=32:GOSUB1560
1040 PRINTCHR$(5)M$"TIME":PRINTM$"CHECK"
1050 RW=0:CL=12:GOSUB1560
1060 PRINTCHR$(31);:FORI=1TO3:PRINTM$LEFT$(P$,P1):NEXT
1070 GC=FRE(0)
1080 C4=C1+921:S4=S1+921:FORI=0TO5:POKEC4+I,68:POKES4+I,112+I:NEXT
1090 GOSUB1280:IFZ=1THENPOKESD+12,39:POKESD+13,176
1100 TI$="000000"
1110 REM*******MAIN CONTROL ROUTINE*****
1120 F2=0:C5=C1+932:S5=S1+932:C7=C1+972+D*3:S7=S1+972+D*3:C8=C1+970:S8=S1+970
1130 C9=C1+12:V7=0:WV=17
1140 PL=0:BP=PL:SP=0:V4=0:V5=0:R2=0:KV=0:GOSUB1880:GOSUB1990:GOSUB2160
1150 A=0:IFKJ=1THEN GOSUB 1680:GOTO1180
1160 GETA$
1170 A=ASC(A$+CHR$(0))
1180 IFA=145THENM%(PL)=M%(PL)-1:GOSUB1930
1190 IFA=29THENPL=PL+1:GOSUB1880
1200 IFA=17THENM%(PL)=M%(PL)+1:GOSUB1930
1210 IFA=157THENPL=PL-1:GOSUB1880
1220 IFA=13THENGOSUB2020
1230 IFA$="Q"ORKV=62 THENF2=1:GOSUB2380:GOSUB2410
1240 IFA$="J"THENA$="":KJ=1
1250 IFA$="T"ORKV=22THENGOSUB2380:JV=0
1260 GC=FRE(0):IFV7=1THEN560
1270 GOTO 1150
1280 REM **** SET CODE **************
1290 FORI=0TOD-1:X=RND(0)
1300 N%(I)=INT(RND(1)*E+1)
1310 CH=N%(I)*4+92:IFCH=128THENCH=160
1320 CH$=CH$+CHR$(CH)+CHR$(CH+1)+CHR$(32)
1330 CJ$=CJ$+CHR$(CH+2)+CHR$(CH+3)+CHR$(32)
1340 NEXT
1350 RETURN
1360 REM ******* ALWAYS INCLUDE GOSUB LINE N0 ! ********
1370 REM ********************************
1380 REM ******* SET PARAMETERS FOR RELEVANT MACHINE ***
1390 IFZ=1THEN1480:REM =C64
1400 REM
1410 REM ******* +4 ***************
1420 VOL8:B=65301:F=65305:S1=3072:C1=2048
1430 POKE835,60:POKE844,61:SYS828:SYS849
1440 POKE65299,60:POKE65298,0
1450 RETURN
1460 REM
1470 REM ******************************
1480 REM ******* C64 ***************
1490 B=53281:F=53280:S1=1024:C1=55296:SD=54272
1500 FORT=0TO24:POKESD+T,0:NEXT:POKESD+5,39:POKESD+6,176:POKESD+24,15
1510 POKE56334,PEEK(56334)AND254:POKE1,PEEK(1)AND251:REM INT OFF,CHARAS IN
1520 SYS828
1530 POKE1,PEEK(1)OR4:POKE56334,PEEK(56334)OR1:REM INT ON ETC
```

```
1540 POKE53272,(PEEK(53272)AND240)OR14
1550 RETURN
1560 REM ***POS CURSOR **********
1570 M$=LEFT$(CR$,CL):PRINTLEFT$(CD$,RW+1);
1580 RETURN
1590 REM ***MEGABLOB SELECTION ONTO SCREEN********
1600 FORI=1TOE:A=A%(I):J=J%(I):B=3+80*I
1610 POKEC2+B,A:POKEC2+1+B,A:POKEC2+40+B,A:POKEC2+41+B,A
1620 POKES2+B,J:POKES2+1+B,J+1:POKES2+40+B,J+2:POKES2+41+B,J+3:NEXTI
1630 RETURN
1640 REM **PUT IN COLUMN POINTERS**
1650 FORI=1TOD*3STEP3:POKEC3+I,41:POKEC3+1+I,41:POKES3+I,106:POKES3+1+I,107
1660 NEXT
1670 RETURN
1680 REM****JOYSTICK READ**********
1690 IFZ=1THEN1790
1700 REM*****+4******
1710 JV=JOY(2)
1720 IFJV=128THENA=13
1730 IFJV=1THENA=145
1740 IFJV=3THENA=29
1750 IFJV=5THENA=17
1760 IFJV=7THENA=157
1770 KV=PEEK(198):IFKV=37THEN KJ=0:FORI=0TO9:POKE1319+I,0:NEXT
1780 RETURN
1790 REM***64********
1800 JV=PEEK(56320)
1810 IFJV=111THENA=13
1820 IFJV=126THENA=145
1830 IFJV=119THENA=29
1840 IFJV=125THENA=17
1850 IFJV=123THENA=157
1860 KV=PEEK(197):IFKV=37THEN KJ=0:FORI=0TO9:POKE631+I,0:NEXT
1870 RETURN
1880 REM *****MOVE LOWER POINTER****
1890 IFPL=>DTHENPL=D-1
1900 IFPL<0THENPL=0
1910 POKEC5+BP*3,41:POKEC5+BP*3+1,41:POKEC5+PL*3,113:POKEC5+PL*3+1,113:BP=PL
1920 RETURN
1930 REM *****POSN MEGABLOBS********
1940 IFM%(PL)=<0THENM%(PL)=E
1950 IFM%(PL)>ETHENM%(PL)=1
1960 V1=PL*3-80*R2:C6=C5+V1:S6=S5+V1:V2=A%(M%(PL)):V3=J%(M%(PL))
1970 FORI=0TO1:POKEC6+I,V2:POKES6+I,V3+I:POKEC6+40+I,V2:POKES6+40+I,V3+2+I
1980 NEXT:RETURN
1990 REM ******RESET FOR NEW ROW ****
2000 FORI=0TOD-1:M%(I)=0:R%(I)=0:S%(I)=0:NEXT:V5=0:CT=0
2010 RETURN
2020 REM**CHECK COMPLETED ROW********
2030 F1=0:FORI=0TOD-1:IFM%(I)=0THENF1=1
2040 NEXT
2050 IF F1=0THEN 2080
2060 IFF1=1THENPRINTCHR$(5):GOSUB2250:FORI=1TO800:NEXT
2070 PRINTCHR$(30):GOSUB2250:GC=FRE(0):RETURN
2080 REM **CHECK FOR CORRECT SOLUTION**
2090 GOSUB2380
2100 FORI=0TOD-1:IFM%(I)=N%(I)THENR%(I)=1:S%(I)=1:CT=CT+1:GOSUB2280
2110 NEXTI
2120 IFCT=DTHENF2=0:GOSUB2410:RETURN
2130 FORI=0TOD-1:FORB=0TOD-1
2140 IFM%(B)=N%(I)ANDR%(I)=0ANDS%(B)=0THEN GOSUB2320
2150 NEXTB,I
2160 REM*****MOVE SIDE POINTER******
2170 POKES7-V4,32:POKES7-40-V4,32:SP=SP+1:V4=SP*80
```

continued on page 112

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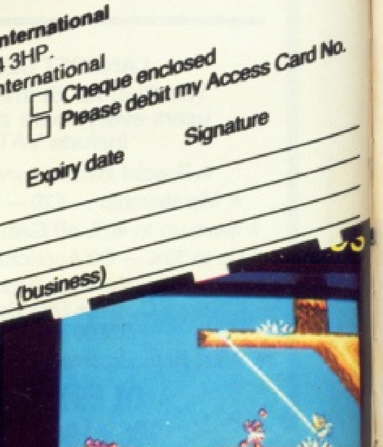

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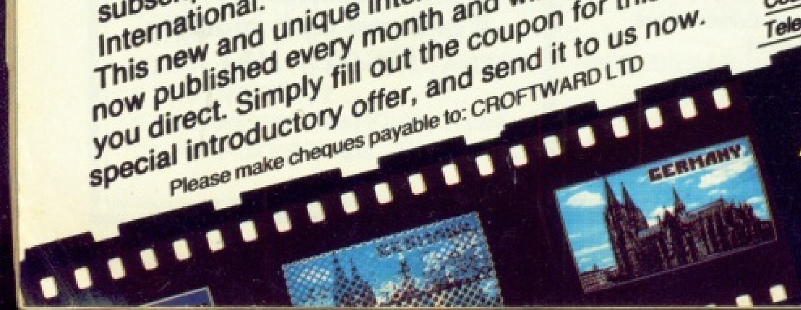

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With 'cheap' disks the risk of data loss on a poor quality disk is increased dramatically – hours of hard work can disappear instantly – and an abrasive disk can actually permanently damage the read/write head on your computer.

Commodore has decided to help solve this problem – the new Commodore label diskettes now available in the UK offer higher quality at a lower cost and guarantee consistent precision in the recording and storage of data on your disks – forever.

The secret of the Commodore brand disk is based on two important features: the special coating formulation and integral lubrication. Together, these features ensure that there is no data loss or damage to your drive head.

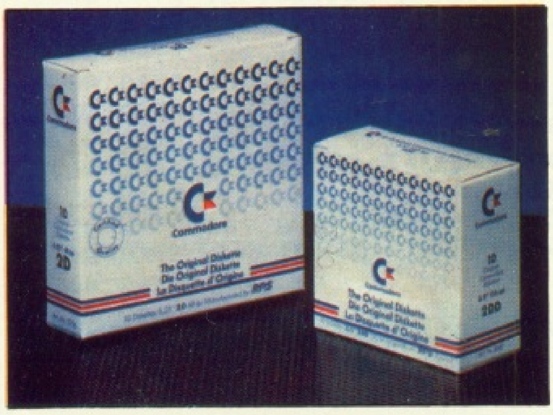
Due to the special formulation of the Commodore disk, there is minimal variation in signal strength from the disk drive's read/write head, thus ensuring the signal never falls below the error threshold when the disk would be unreadable. This means there is consistent precision in the recording of information.

All floppy disks have a lubricant to minimise the wear caused by the disk on the disk drive. However, unlike most disks which have a lubricant applied to the surface which gradually wears off and causes damage, Commodore disks have an integral lubricant bonded into the coating – it will never wear out.

This gives the disk a tough, protective and flexible surface, and ensures the read head is not contaminated by any loose oxide particles which can often occur with repeated use and wear.

Being a Commodore disk, each disk you use has been approved to offer lifetime, error free performance. You can't see the difference, but then guarantee you'll never lose any of the information you put on it!

The new Commodore brand, both 3½" and 5–" formats, is available from specialist supplier COMPUMART a boxof ten 5¼"from £7.95, and the 3½" cost £17.95.



HOW TO ENTER

On the competition entry form you will find a grid containing 15 words relating to Commodore brand floppy diskettes.

Simply find the words on the grid (they may be horizontal, vertical, diagonal, backwards or forwards) and complete the tie-break in your own words.

Return the Entry Form with your personal details to Commodore Computing International to reach the judges no later than Jan 1st 1989.

All correct entries will be entered in the prize draw for the prizes and, in the event of there being more than one correct answer, the judges will make their final decisions based upon your answer to the tie-break.

ENTRY FORM

(delete italics to form your answer)

S	I	D	R	E	T	U	P	M	O	C	P	D
S	T	O	R	R	E	W	O	L	T	O	A	D
N	E	O	G	N	I	D	R	S	C	S	R	E
O	G	U	R	A	N	T	I	M	T	T	T	E
I	E	A	I	A	Y	O	U	X	C	D	I	T
T	S	T	O	R	G	A	E	P	O	A	C	N
A	O	F	L	I	F	E	T	I	M	E	L	A
L	F	I	P	P	Y	C	O	M	M	H	E	R
U	T	L	O	P	R	E	C	I	O	E	S	A
M	W	O	O	X	D	I	E	A	D	A	S	U
R	C	O	M	P	U	M	E	T	O	I	U	G
O	L	C	O	M	P	U	M	A	R	T	S	E
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Tie-Break (complete in twenty words or less)

Commodore disks are better because ……………………………………

MY COMPUTER IS A ……………………………………

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RULES

1. All entries must be received by and only official entry forms or photocopies will be accepted. Proof of posting does not constitute proof of receipt.
2. Employees associates and printers of Commodore Computing International, The Publicity Team and Compumart are not eligible to enter this competition.
3. All prizes are as stated – there are no cash or other alternatives.
4. All correct entries will be entered into a final draw, which will be made by the judges panel comprising representatives from Commodore Computing International, Compumart and The Publicity Team.
5. The judges decision will be final and no correspondence will be entered into.
6. The prizes will be awarded and will become the personal property of the winning entrants.
7. All prize winners will be notified by telephone and/or post and a full list will be published in the March issue of Commodore Computing International.

continued from page 108

```
2180 IFSP=11THENF2=1:GOSUB2380:GOSUB2410:RETURN
2190 POKEC7-V4,113:POKEC7-40-V4,113
2200 POKES7-V4,109:POKES7-40-V4,108
2210 IFZ=1THENPOKESD+4,0:POKESD+11,0:POKESD+1,0:POKESD+8,0
2220 REM**** RESET BLOB STORE***
2230 GOSUB 1990:R2=R2+1
2240 RETURN
2250 RW=13:CL=31:GOSUB1560
2260 PRINTM$"[CR][CD] NO ":PRINTM$;"[CR]BLANKS"
2270 RETURN
2280 REM***RIGHT BLOB RIGHT COLUMN ***
2290 R3=200:R4=360:SR=0
2300 POKEC8-V4+V5,113:POKEC8-40-V4+V5,113:POKES8-V4+V5,101:POKES8-40-V4+V5,100
2310 GOTO2350
2320 REM**RIGHT BLOB WRONG COLUMN ***
2330 R%(I)=1:S%(B)=1:R3=500:R4=660:SR=24
2340 POKEC8-V4+V5,87:POKEC8-40-V4+V5,87:POKES8-V4+V5,103:POKES8-40-V4+V5,102
2350 V9=13:V8=1:IFZ=1THEN POKESD+11,0
2360 GOSUB2770:V5=V5-1
2370 RETURN
2380 REM ***PUT IN TIME CHECK ********
2390 RW=22:CL=32:GOSUB1560
2400 PRINTM$CHR$(5)MID$(TI$,3,2)":"RIGHT$(TI$,2):RETURN
2410 REM****REVEAL HIDDEN BLOBS ETC **
2420 RW=0:CL=12:GOSUB1560
2430 FORI=0TOD-1:U(I)=A%(N%(I)):NEXT
2440 PRINTCHR$(31)M$CH$:PRINTM$CJ$
2450 PRINTM$LEFT$(SP$,16)
2460 FORI=0TOD-1:POKEC9+I*3,U(I):POKEC9+I*3+1,U(I)
2470 POKEC9+40+I*3,U(I):POKEC9+41+I*3,U(I):NEXT
2480 WV=17:F3=1:F4=2:SR=0:V8=0:V9=43:IFF2=1THENWV=129:F3=3:F4=3
2490 IFZ=1THENPOKESD+12,66:POKESD+13,195:POKESD+11,0
2500 GOSUB2770:GOSUB2750:IFZ=1THENPOKESD+4,0:POKESD+11,0
2510 FORB=1TO5:GOSUB2720:FORI=1TO40:NEXT:GOSUB2650:FORI=1TO200:NEXT:NEXTB
2520 GC=FRE(0)
2530 RW=12:CL=31:GOSUB1560:PRINTCHR$(5)
2540 PRINTM$"ANOTHER":PRINTM$"[CR]GAME[CR]?":PRINTM$"[CR2]Y/N
2550 GETA$:IFA$<>"Y"ANDA$<>"N"THEN2550
2560 IFA$="Y"THENPRINTCHR$(147):V7=1:RETURN
2570 RW=13:CL=31:GOSUB1560
2580 PRINTCHR$(5)M$"ARE YOU":PRINTM$"[CR]SURE[CR]"
2590 GETA$:IFA$<>"Y"ANDA$<>"N"THEN2590
2600 IFA$="N"THENA$="Y":GOTO2560
2610 IFZ=1THEN2630
2620 SYS62116
2630 SYS64738
2640 RETURN
2650 RW=4:CL=31:GOSUB1560
2660 IFF2=1THEN2700
2670 PRINTM$CHR$(5)"*MEGA*":PRINTM$"*MIND*"
2680 PRINTM$"[CD2]YOU[CR]DID":PRINTM$"[CD]IT[CR]IN";SP
2690 GOTO 2710
2700 PRINTM$CHR$(129)"*NEVA*":PRINTM$"*MIND*"
2710 GC=FRE(0):RETURN
2720 RW=4:CL=31:GOSUB1560
2730 PRINTM$CHR$(31)LEFT$(N$,6):PRINTM$CHR$(28)LEFT$(N$,6)
2740 GC=FRE(0):RETURN
2750 RW=3:CL=30:GOSUB1560
2760 FORI=1TO7:PRINTM$CHR$(28)N$:PRINTM$CHR$(31)N$:NEXT:RETURN
2770 REM ******SOUNDS**********
2780 IFZ=0THEN2850
2790 K=V8:POKESD+4,WV:POKESD+11,WV:FORR=1TOV9STEP6
2800 M3=VAL(MID$(MU$(K),R+SR,3)):M4=VAL(MID$(MU$(K),R+SR+3,3))
2810 POKESD+1,M3:POKESD,100:POKESD+8,M4:POKESD+7,100
```

```
2820 NEXTR:IFV8<>0THEN2840
2830 V8=1:FORR=V9TO1STEP-6:GOTO2800
2840 RETURN
2850 IFV8=0THEN2870
2860 FORK=R3TOR4 STEP80:SOUND1,K,2:SOUND2,K+100,1:NEXT:RETURN
2870 FORI=1TO22STEP3
2880 M3=VAL(MID$(MU$(2),I,3)):M4=VAL(MID$(MU$(2),I+24,3))
2890 SOUNDF3,M3,8:SOUNDF4,M4,8
2900 NEXTI
2910 RETURN
2920 REM ***DATA M/C ROUTINE ******
2930 DATA 160,000,185,000,208,153,000,056,200,208,247,185,000,209,153,000,1964
2940 DATA 057,200,208,247,096,169,092,141,000,003,169,003,141,001,003,096,1626
2950 DATA 169,209,141,019,255,169,196,141,018,255,076,134,134,000,000,000,1916
2960 REM ****U/D CHARA DATA ********
2970 DATA 000,000,007,015,025,029,062,060,000,000,224,240,152,184,124,060,1182
2980 DATA 063,055,024,031,015,007,000,000,252,236,024,248,240,224,000,000,1419
2990 DATA 000,000,002,006,039,055,061,045,000,000,064,096,228,236,188,180,1200
3000 DATA 063,060,027,031,013,009,000,000,252,060,216,248,176,144,000,000,1299
3010 DATA 000,000,003,007,031,031,057,121,000,000,192,224,248,248,156,158,1476
3020 DATA 127,127,031,013,006,007,001,000,254,254,248,176,096,224,128,000,1692
3030 DATA 000,000,001,003,007,013,025,057,000,000,128,192,224,176,152,156,1134
3040 DATA 063,063,060,115,119,127,063,000,252,252,060,206,238,254,252,000,2124
3050 DATA 000,000,013,031,063,103,103,127,000,000,176,248,252,230,230,254,1830
3060 DATA 122,060,031,015,015,007,001,000,094,060,248,240,240,224,128,000,1485
3070 DATA 000,000,006,015,031,063,063,121,000,000,096,240,248,252,252,158,1545
3080 DATA 121,126,062,027,008,015,007,000,158,126,124,216,016,240,224,000,1470
3090 DATA 000,000,001,007,031,029,057,057,000,000,128,224,248,184,156,156,1278
3100 DATA 063,062,029,011,007,007,001,000,252,124,184,208,224,224,128,000,1524
3110 DATA 000,000,113,123,063,063,025,009,000,000,142,222,252,252,152,144,1560
3120 DATA 015,015,025,062,062,127,015,000,240,240,152,124,124,254,240,000,1695
3130 DATA 000,007,031,063,060,115,115,063,000,224,248,252,060,206,206,252,1902
3140 DATA 062,063,055,057,014,007,007,000,124,252,236,156,112,224,224,000,1593
3150 DATA 000,000,000,060,126,090,082,090,090,090,090,126,060,000,000,000,0904
3160 DATA 000,000,000,000,036,126,126,126,090,090,126,060,000,000,000,000,0780
3170 DATA 060,126,219,255,255,102,060,000,102,103,090,090,066,066,067,000,1661
3180 DATA 000,000,001,003,007,015,007,000,000,000,128,192,224,240,224,000,1041
3190 DATA 000,000,000,000,002,006,015,031,031,015,006,002,000,000,000,000,0108
3200 DATA 024,060,126,024,024,126,060,024,000,036,102,255,255,102,036,000,1254
3210 DATA 000,048,072,136,240,147,148,143,000,000,000,001,048,200,202,073,1458
3220 DATA 000,096,136,012,200,041,042,197,000,000,002,003,002,186,074,189,1180
3230 DATA 000,000,006,013,097,241,130,115,000,000,198,041,239,074,049,207,1410
3240 REM*SOUND DATA-INCLUDE ALL ZEROS*
3250 DATA063,033,050,025,063,016,075,012,067,018,063,033,056,028,050,042,694
3260 DATA010,008,012,010,015,012,018,015,044,018,037,015,031,012,025,010,292
3270 DATA911,881,911,929,917,911,897,881,810,739,596,453,643,810,770,854,12913
3280 REM ******COLOUR DATA *********
3290 DATA 053,064,097,068,034,072,067,076,068,080,056
3300 DATA 084,070,088,044,092,071,096,1280
```

★ Program Submission Procedure ★

DO NOT submit any program or routine that you do not either own or have property authority to do so.

ALWAYS include your name, address and the date on all material and any enclosures.

Do not forget to make it clear exactly which computer/s your program or article is applicable to.

Include ROM or DOS versions wherever they are pertinent.

If you have to submit work which is hand-written then you must make sure it is printed clearly.

Number all pages.

Never use staples. Use paperclips if necessary.
If you are saving your program to tape then save it AT LEAST twice on each side.
When you save a program on disk save it twice and call the second file "BACKUP".

Remember to label all tapes and disks with your name and the title of the program. Label tape or disk with your name and the name or title of the program.

Always ensure that disks are well packaged. They should ideally be sent in a commercial disk mailer or at least packed between two pieces of hardboard or rigid plastic.

Please allow at least 8 weeks for acknowledgement as all programs have to be thoroughly tested and made into a suitable format.

Enclose a self-addressed stamped envolope or package if you would like your program to be returned.

★ Programming tips ★

If you can, use CHR$(x) type commands instead of those hard to read graphic symbols.
If necessary renumber your program on completion a many readers use auto number utilities to ease typing in.

Try to keep instructions within the program itself at a sensible level. You can expand on them within the accompany text if necessary.

TEST your programs before submitting them or even better get a friend to test them for you.

If a program contains machine code data please use decimal and not hex as there are fewer digits to be confused. Try and keep the same number of data statements in each line. Please add some form of error checking if your program contains more than five lines of data.

SUPER INPUT

C64

Norman Hart

A routine to give the user a standard input system, preventing all sorts of silly input errors.

SUPER INPUT

Most of us, from time to time, will have used the straightforward INPUT statement in our programmes, and in its raw state, the system employed by the CBM 64 is good enough for the majority of purposes. However, problems arise when unskilled hands attempt to use such a program; just cursor down, for example, and your program will eventually slide off the top of the screen, resulting in embarrassment for the programmer and frustration for the user.

What is needed is some form of control over what can and what cannot be keyed in at such vital times. The enclosed program demonstrates a subroutine that allows the programmer to define the following:

a) . . . The type of characters allowed – i.e. letters or numbers or a combination of both. Check the values of the variable R in the REM statements.

b) . . . Certain punctuation marks – i.e. full stops, minus and plus signs. Beware, however, of commas and colons, since these will cause problems with the routine. Examine lines 1130 to 1150.

c) . . . The cursor can be anything you choose. I've opted for the minus sign "–". Examine line 1000.

d) . . . The routine can be tabulated (the variable T).

e) . . . The maximum number of characters to be input MUST be defined (the variable M). Don't forget T + M should not exceed 38.

f) . . . The length of the return string (IN$) can be instantly assessed (the variable N).

g) . . . The routine does not normally allow an input to begin or end with a SPACE character (chr$(32)), and only allows one SPACE character between groups of other characters. This ensures a consistent approach when using the returned string for searching data files. Shifted/SPACE is unaffected (chr$(160)).

So there it is, a fairly short routine that will enhance the appearance and presentation of any program that would normally use the INPUT statement.

```
10 REM     ******************
11 REM     *                *
12 REM     *  SUPER  INPUT  *
13 REM     *                *
14 REM     *       BY       *
15 REM     *                *
16 REM     *    N.  HART    *
17 REM     *                *
18 REM     *  23 JUNE 1988  *
19 REM     *                *
20 REM     ******************
21 :
22 :
23 :
100 R=0:M=15:T=5:GOSUB1000:PRINT"*"IN$"*"
110 R=1:M=5:T=12:GOSUB1000:PRINT"*"IN$"*"
120 R=2:M=25:T=1:GOSUB1000:PRINT"*"IN$"*":GOTO100
130 :
140 :
150 :
160 :
900 REM R=0 LETTERS & NUMBERS
910 REM R=1 LETTERS ONLY
920 REM R=3 NUMBERS ONLY
930 REM M=? MAX. NUMBER OF CHARACTERS
940 REM T=? TABULATION OF ROUTINE
950 :
960 :
970 :
1000 C=ASC("-"):REM THIS IS YOUR CURSOR
1010 IN$="":N=0:S=1
1020 PRINTTAB(T)CHR$(18);:FORX=1TOM:PRINTCHR$(32);:NEXT
1030 PRINTCHR$(145):PRINTTAB(T)CHR$(18)CHR$(C);
1040 POKE198,0:WAIT198,1:H=PEEK(631)
1050 IFH>64ANDH<91AND(R=0ORR=1)THENS=0:GOTO1200
1060 IFH>47ANDH<58AND(R=0ORR=2)THENS=0:GOTO1200
1070 IFH=13THEN1250
1080 IFH=20THENS=0:GOTO1170
1090 IFN=MTHEN1040
1100 IFH=32ANDS=1THEN1040
1110 IFH=32THENS=1:GOTO1200
1120 IFH=160THENS=0:GOTO1170
1130 IFH=ASC(".")THENS=0:GOTO1170
1140 IFH=ASC("'")THENS=0:GOTO1170
1150 IFH=ASC("£")THENS=0:GOTO1170
1160 GOTO1040
1170 IFN=0ANDH=20THEN1040
```

```
1180 IFH=20ANDN<>MTHENN=N-1:PRINTCHR$(157)CHR$(157)CHR$(C);
1190 IFH=20ANDN<>MTHENPRINTCHR$(32)CHR$(157);:GOTO1040
1200 N=N+1:IFN<MTHENPRINTCHR$(157)CHR$(H)CHR$(C);:GOTO1040
1210 IFN=MTHENPRINTCHR$(157)CHR$(H)CHR$(146)CHR$(32)CHR$(18);:GOTO1040
1220 IFN>MTHENN=N-1:GOTO1230
1230 IFH=20THENN=N-1:PRINTCHR$(157)CHR$(157)CHR$(C);
1240 GOTO1040
1250 IFN=0THENIN$="":RETURN
1260 IFS=1ANDN=MTHENN=N-1:PRINTCHR$(157)CHR$(146)CHR$(32)CHR$(157);:GOTO1280
1270 IFS=1THENN=N-1:PRINTCHR$(157)CHR$(32)CHR$(157);
1280 PRINTCHR$(157)CHR$(18)CHR$(58):PRINTTAB(T)CHR$(145);
1290 OPEN1,3:INPUT#1,IN$:CLOSE1
1300 IFN<>MTHENPRINTTAB(T+N)CHR$(145)CHR$(18)CHR$(C)
1310 IFN=MTHENPRINTTAB(T+N)CHR$(145)CHR$(146)CHR$(32)
1320 RETURN
```

3D SINE PLOT

C64

Lee Malpas

This is a very short and simple routine, but very worthwhile having a good look at. It uses some of the most important processes in getting hi-res graphics going on the C64.

```
10 POKE53265,59:POKE53272,29:PRINT"[CLR]":POKE53280,0:PRINT"[GRN][CLR]":POKE5327
0,200
20 FORT=1TO23:PRINT"[CU]PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP":NEXT:PRINT"[HO
M]"
22 FORZ=1944TO1983:POKEZ,16:NEXTZ
25 FORI=8192TO16191:POKEI,0:NEXTI
30 X=-2:A=0:B=8:C=1:D=.3:H=(80-D)*SIN(D/4)
40 FORPT=1TO25:FORT=1TO60:A=A+.2:X=X+B/1.6
50 Y=((H)*SIN(A)+(180-C))
60 ROW=INT(Y/8):CHAR=INT(X/8):LINE=YAND7:BIT=7-(XAND7)
70 BYTE=8192+ROW*320+CHAR*8+LINE:POKEBYTE,PEEK(BYTE)OR2↑BIT:NEXTT
80 D=D+1:X=-4+3*D:A=0:B=B-.175:C=C+8-(D/4):H=(80-D)*SIN(D/8):NEXTPT
90 GETA$:IFA$=""THEN90
100 PRINT"[CLR]":POKE53265,155:POKE53272,21
```

LANDER 2

C64

Lee Malpas

Lee Malpas (from Happy Valley in Australia! We'd all like to live there!!) has written a good BASIC game, with simple gameplay. It is very addictive and proves that a game can be programmed in BASIC – and be entertaining.

```
100 REM          *******************************
101 REM         **                            **
102 REM         **     ** LANDER ][ **        **
103 REM         **                            **
104 REM         ** WRITTEN BY L MALPAS IN 88' **
105 REM         **                            **
106 REM          *******************************
107 REM
108 POKE53265,155:POKE53270,200:POKE53281,0:POKE53280,0:V=53248:POKEV+21,0
109 POKE53272,21:PRINTCHR$(8):PRINT"[CLR][YEL][CD3][CR14]PLEASE WAIT"
110 POKE54296,0:FORI=12288TO12471:READA:POKEI,A:POKE53280,A:NEXT
111 FORI=12672TO12751:READB:POKEI,B:POKE53280,B:NEXT
112 FORI=12800TO13056:READC:POKEI,C:POKE53280,C:NEXT:POKE53280,0
113 FORI=13056TO13120:POKEI,255:NEXT:PRINT"[CLR]"
114 FORI=12472TO12600:POKEI,0:NEXT:GOTO152
115 POKE53265,155:POKE53270,56:POKE53272,29:PRINT"[CLR]":LEV=LEV+1
116 PRINT"[CLR][CD][WHT][CR5]CBAG[CR][YEL]VVVVVV[WHT][CR9]GAFAG[YEL]";LEV
117 PRINT"[CD][WHT][CR14]LDKEA[YEL]";SCO
118 PRINT"[CD][ORNG]BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB"
119 S=54272:FORCT=0TO24:POKES+CT,0:NEXT
120 IFLEV=1THEN214
121 IFLEV=2THEN190
122 IFLEV=3THEN238
123 IFLEV=4THEN180
124 GRA=0:THRU=0:REM **** LOOP ****
125 JV=PEEK(56320):FR=JVAND16:JV=15-(JVAND15)
126 IFJV=4THENX=X-2:POKE53248,X
127 IFFU<105THEN269
128 IFPEEK(V+31)=1THEN144
129 IFFR<>16THENTHRU=THRU+.115:POKE54296,15:POKE2040,201:FU=FU-.5
130 IFPEEK(V+31)=5THEN144
131 IFJV=8THENX=X+2:POKE53248,X
132 GRA=GRA+.175:GRA=GRA-THRU:Y=Y+GRA:POKE53249,Y:POKE53252,FU
133 IFFR<>16THENTHRU=THRU+.115:POKE54296,15:POKE2040,202:FU=FU-.25
134 IFFR=16THENTHRU=0:POKE54296,0:POKE2040,200
135 SCO=SCO+1:PRINT"[HOM][CD3][WHT][CR14]LDKEA[YEL]";SCO:IFPEEK(V+30)=3THEN138
136 GOTO125
137 REM *** BONUS LEVEL ***
138 POKE2040,200:POKE54296,0:POKE53248,TAJ:POKE53249,JAT:JOS=1
139 POKE54273,50:POKE54276,33
```

```
140 POKE54296,15:FU=FU-.25:POKE54276,21:POKE53252,FU:SCO=SCO+125:POKE54296,0
141 JOS=JOS+2:PRINT"[HOM][CD3][WHT][CR14]LDKEA[YEL]";SCO:POKE54287,JOS
142 POKE54276,33:IFFU<105THEN115
143 GOTO140
144 REM *** CRASH ***
145 POKE54296,0:POKE54276,0:POKE54277,11:POKE54278,11:POKE54276,129
146 POKE54296,15:POKE54273,12:POKE54273,1:FORCT=1TO25:POKEV+21,6
147 FORT=1TO50:NEXT:POKEV+21,7:FORT=1TO50:NEXT:NEXTCT
148 X=69:Y=97:POKE53248,X:POKE53249,Y:PRINT"[HOM][CD7][ORNG][CR11][SP13]"
149 PRINT"[WHT][CR11][SP2]JHIA KFAE[SP2]"
150 PRINT"[WHT][CR11][SP13]"
151 POKEV+21,0:FORT=1TO2500:NEXT:GOTO152
152 REM **** TITLE ****
153 PRINT"[CLR]":POKE53265,155:POKE53272,21:POKE53270,200:POKE54296,0
154 S=54272:FORT=0TO24:POKES+T,0:NEXT
155 POKE53281,0:POKE53280,0
156 PRINT"[HOM][CD5][YEL][CR12]_[CR5]_[CR2]_[CR2]_[CR3]_[CR]_"
157 PRINT"[CR8] |[CR2] ⊔ N |[CR]| L[CR] ⊔ [CR2][REV]▌[OFF] ▌"
158 PRINT"[CR8] ▌ [CR] ▌| ▌| ▌| ▌ [CR][REV]▌ [OFF]\[CR3][REV]▌ [OFF] ▌"
159 PRINT"[CR9]‾[CR8]‾[CR2]‾[CR6]‾[CR]‾"
160 PRINT"[CD2][GRN][CR3] WRITTEN BY LEIGH MALPAS IN 1988."
161 PRINT"[CD][CR4] PRESS FIRE ON JOYSTICK PORT 2.":GOTO166
162 PRINT"[HOM][CD5][CR12]_[CR5]_[CR2]_[CR2]_[CR3]_[CR]_"
163 PRINT"[CR8] |[CR2] ⊔ N |[CR]| L[CR] ⊔ [CR2][REV]▌[OFF] ▌"
164 PRINT"[CR8] ▌ [CR] ▌| ▌| ▌| ▌ [CR][REV]▌ [OFF]\[CR3][REV]▌ [OFF] ▌"
165 PRINT"[CR9]‾[CR8]‾[CR2]‾[CR6]‾[CR]‾":RETURN
166 PRINT"[LBLU]":GOSUB162
167 IFPEEK(56320)=111THEN179
168 PRINT"[CYN]":GOSUB162
169 IFPEEK(56320)=111THEN179
170 PRINT"[WHT]":GOSUB162
171 IFPEEK(56320)=111THEN179
172 PRINT"[CYN]":GOSUB162
173 IFPEEK(56320)=111THEN179
174 PRINT"[LBLU]":GOSUB162
175 IFPEEK(56320)=111THEN179
176 PRINT"[BLU]":GOSUB162
177 IFPEEK(56320)=111THEN179
178 GOTO166
179 GRA=0:LEV=0:THRU=0:SCO=0:PRINT"[CLR]":GOTO115
180 S=54272:FORT=0TO24:POKES+T,0:NEXT:POKE54296,15:POKE54277,128:POKE54278,128
181 POKE53272,21:PRINT"[WHT][CLR]":POKEV+21,1:POKEV+23,1:POKEV+29,1
182 POKEV+28,1:POKEV+37,12:POKEV+38,11:POKEV+39,7
183 POKE53248,150:POKE53249,150:PRINT"[HOM][CD2] **[SP2]C O N G R A T U L A T I
O N S[SP2]**"
184 PRINT"[CD2][YEL][CR4] YOU'VE MANOUVERED YOUR WAY TO"
185 PRINT"[CD][CR7] BECOME A MEGA-HERO!!!...."
186 PRINT"[CD][CR9] YOUR SCORE WAS";SCO
187 FORT=0TO150STEP2:POKE54276,33:POKE54273,T:POKE54276,21:POKE2040,201
188 POKE54287,T:POKE54276,129:POKE2040,202:NEXT
189 POKE54296,0:FORT=1TO2000:NEXT:POKEV+21,0:GOTO152
190 POKE53282,9:POKE53283,13
191 PRINT"[ORNG]MMMMT[CR5]NMMMMMMMMMMMMMMMMMMMMMMM"
192 PRINT"MMMMO[CR4]UMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
193 PRINT"MMMMT[CR4]NMMMMMMMMMMMMMMPQMMMMMMMMMMMMM"
194 PRINT"MMMP[CR4]UMMMMMMMMMMMMMMMOUMMMMMMMMMMMMM"
195 PRINT"MMMT[CR4]UMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
196 PRINT"MMP[CR5]SQMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
197 PRINT"MMP[CR4]NMOMMMMMMMMPRPRRQMMMMMMMMMMMMMMM"
198 PRINT"MP[CR4]UMMMMMMMPRR[CR5]UMMMMMMMMMMMMMMMM"
199 PRINT"MT[CR4]UMMMMMMP[CR8]QMMMMMMMMMMMMMMMM"
200 PRINT"MO[CR5]QMMMPR[CR9]UMMMMMMMMMMMMMMMM"
201 PRINT"MMT[CR5]RRR[CR6]NT[CR4]QMMMMMMMMMMMMMMM"
202 PRINT"MMMO[CR11]SNMO[CR5]UMMMMMMMMMMMMMM"
203 PRINT"MMMMO[CR8]SNMMMMT[CR4]QMMMMMMMMMMMMMM"
204 PRINT"MMMMMOS[CR5]NMMMMMMP[CR4]UMMMMMMMMMMMMMM"
```

```
205 PRINT"MMMMMMMOSSSNMMMMMMMT[CR4]UMMMMMMMMMMMMMM"
206 PRINT"MMMMMMMMMMMMMMMMMMMO[CR4]NMMMMMMMMMMMMM"
207 PRINT"MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
208 PRINT"MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM[HOM]"
209 V=53248:POKEV+21,7:POKE2040,200:POKE2041,203:POKE2042,204:FU=104
210 POKEV+23,0:POKEV+29,4:POKEV+28,3:POKEV+37,14:POKEV+38,6:POKEV+39,7
211 POKEV+40,0:POKEV+41,0:POKE53252,FU:POKE53253,46:POKE53250,188:TAJ=189
212 X=69:Y=97:POKE53251,207:POKE53248,X:POKE53249,Y:JAT=204:GOSUB262
213 GOTO124
214 POKE53282,11:POKE53283,14
215 PRINT"MOS[CR7]NMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
216 PRINT"MMMO[CR5]UMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
217 PRINT"MMMMT[CR4]NMMMMMMMMMMMMPQMMMMMMMMMMMMMMM"
218 PRINT"MMMP[CR4]UMMQMMMMMMMMMMMOUMMMMMMMMMMMMMMM"
219 PRINT"MMMT[CR4]UMPUPRRRQMMMMMMMMMMMMMMMMMMMMMMM"
220 PRINT"MMP[CR5]SQTU[CR5]QMMMMMMMMMMMMMMMMMMMMM"
221 PRINT"MMP[CR4]NMO[CR8]QMMMMMMMMMMMMMMMMMMMM"
222 PRINT"MP[CR4]UMMP[CR8]UMMMMMMMMMMMMMMMMMMMM"
223 PRINT"MT[CR4]UMMT[CR9]QMMMMMMMMMMMMMMMMMMM"
224 PRINT"MO[CR5]QP[CR5]N[CR5]RQMMMMMMMMMMMMMMMMMM"
225 PRINT"MMT[CR10]UMT[CR6]RQMPQMMMMMMMMMMMMM"
226 PRINT"MMO[CR10]NMO[CR8]R[CR2]UMMMMMMMMMMM"
227 PRINT"MMMOS[CR7]UMMMT[CR11]NMMMMMMMMMM"
228 PRINT"MMMMMOSS[CR3]SNMMMO[CR10]UMMMMMMMMMMM"
229 PRINT"MMMMMMMOONMMMMMMOSNOS[CR5]NMMMMMMMMMMM"
230 PRINT"MMMMMMMMMMMMMMMMMMMMMMO[CR3]NMMMMMMMMMMMM"
231 PRINT"MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
232 PRINT"MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM[HOM]"
233 V=53248:POKEV+21,7:POKE2040,200:POKE2041,203:POKE2042,204:FU=104
234 POKEV+23,0:POKEV+29,4:POKEV+28,3:POKEV+37,10:POKEV+38,2:POKEV+39,7
235 POKEV+40,0:POKEV+41,0:POKE53252,FU:POKE53253,46:POKE53250,208:TAJ=208
236 X=69:Y=97:POKE53251,207:POKE53248,X:POKE53249,Y:JAT=204:GOSUB262
237 GOTO124
238 POKE53282,11:POKE53283,1
239 PRINT"[ORNG]MMMMMMMMMMMMMMMMMMMMMO[CR6]NMMMMMMMMM"
240 PRINT"MMMMMMBBBBBBPQMMMMMMMT[CR4]UMMMMMMMMMMM"
241 PRINT"MMMMMP[CR9]QMMMMMP[CR4]SNMMMMMMMMMMM"
242 PRINT"MMMMB[CR10]UMMMMMT[CR4]QMMMMMMMMMMMM"
243 PRINT"MMMMB[CR11]QMMMP[CR5]NMMMMMMMMMMMM"
244 PRINT"MMMMB[CR4]NBQ[CR5]QMMT[CR4]UMMMMMMMMMMMMM"
245 PRINT"MMMMB[CR4]BMMO[CR4]UMP[CR5]NMMMMMMMMMMMMM"
246 PRINT"MMMMB[CR4]BMMMO[CR4]QT[CR4]NMMMMMMMMMMMMMM"
247 PRINT"MMMMB[CR4]BMMMMT[CR3]UT[CR3]UMMMMMMMMPUMMMMM"
248 PRINT"MMMMB[CR4]BMMMMT[CR3]RR[CR3]UMMMMMMMMNMMMMMM"
249 PRINT"MMMMB[CR4]BMMMMO[CR8]NMMMMMMMMMMMMMMM"
250 PRINT"MMMMB[CR4]QBBBMMT[CR6]UMMMMMMMMMMMMMMM"
251 PRINT"MMMMB[CR8]BMO[CR6]NMMMMMMMMMMMMMMM"
252 PRINT"MMMMB[CR8]BMMT[CR3]SNMMMMPQMMMMMMMMMMM"
253 PRINT"MMMMB[CR8]BMMOSSNMMMMMMONMMMMMMMMMMM"
254 PRINT"MMMMB[CR8]BMMMMMMMMMMMMMMMMMMMMMMMMMM"
255 PRINT"MMMMBBBBB[CR4]BMMMMMMMMMMMMMMMMMMMMMMMMM"
256 PRINT"MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM[HOM]"
257 V=53248:POKEV+21,7:POKE2040,200:POKE2041,203:POKE2042,204:FU=104
258 POKEV+23,0:POKEV+29,4:POKEV+28,3:POKEV+37,5:POKEV+38,11:POKEV+39,7
259 POKEV+40,0:POKEV+41,0:POKE53252,FU:POKE53253,46:POKE53250,101:TAJ=101
260 X=207:Y=97:POKE53251,218:POKE53248,X:POKE53249,Y:JAT=215:GOSUB262
261 GOTO124
262 POKE54296,15:POKE54277,128:POKE54278,128:POKE54276,17
263 POKE53248,X:POKE53249,Y
264 FORT=20TO114STEP2:FU=FU+1:POKE54273,70:POKE54272,0:POKE54287,T
265 POKE54276,21:POKE53252,FU:NEXT
266 POKE54296,0:POKE54277,128:POKE54278,128:POKE54276,129
267 FORT=1TO75:POKEV+30,PEEK(V+30):POKEV+31,PEEK(V+31):NEXT
268 POKE54273,2:POKE54272,0:RETURN
269 JV=PEEK(56320):FR=JVAND16:JV=15-(JVAND15)
270 IFJV=4THENX=X-2:POKE53248,X
```

```
271 IFPEEK(V+31)=5THEN144
272 IFFR=16THENTHRU=0:POKE54296,0:POKE2040,200
273 IFJV=8THENX=X+2:POKE53248,X
274 IFFR<>16THENTHRU=0:POKE54296,0:POKE2040,200
275 GRA=GRA+.175:GRA=GRA-THRU:Y=Y+GRA:POKE53249,Y:POKE53252,FU
276 SCO=SCO+1:PRINT"[HOM][CD3][WHT][CR14]LDKEA[YEL]";SCO:IFPEEK(V+30)=3THEN138
277 GOTO269:REM***  PICCY DATA ***
278 DATA 0,0,0,0,0,0,0,0,62,96,108,96,96,62,0,0,102;102,102,102,102,60,0
279 DATA 0,62,96,108,96,96,96,0,0,62,96,96,96,96,62,0
280 DATA 0,60,102,108,102,102,102,0,0,102,102,60,60,24,24,0
281 DATA 0,96,96,96,96,96,62,0,0,24,60,102,126,195,195,0
282 DATA 0,126,219,219,219,219,219,0,0,60,96,108,102,102,60,0
283 DATA 0,60,102,102,102,102,60,0,0,60,102,48,12,102,60,0
284 DATA 85,85,85,85,85,85,85,85,2,9,2,9,9,37,37,149
285 DATA 128,96,96,96,88,88,86,86,86,86,88,88,96,96,96,128
286 DATA 149,37,37,37,9,2,2,2,105,130,0,0,0,0,0,0,0,0,0,0,162,89
287 DATA 128,128,96,96,96,128,96,96,9,2,2,9,9,9,2,9
288 DATA 3,15,63,255,255,63,15,3
289 DATA 0,60,102,118,110,102,60,0,0,48,24,24,24,24,60,0
290 DATA 0,60,102,12,48,96,126,0;0,124,6,54,6,6,124,0
291 DATA 0,102,102,62,6,6,6,0,0,124,96,124,6,102,60,0
292 DATA 0,60,96,108,102,102,60,0,0,124,6,12,12,24,24,0
293 DATA 0,60,102,60,102,102,60,0,0,60,102,54,6,102,60,0
294 DATA 0,0,0,0,0,0,20,0,0,95,0,1,107,192,1,170,192,7,190,240,7,190,240
295 DATA 29,255,252,29,255,252,125,255,255,113,255,207,64,127,3,64,0,3
296 DATA 64,0,3,64,0,3,64,0,3,112,0,15,60,0,60,0,0,0,0,0,0
297 DATA 0,0,0,0,0,0,20,0,0,95,0,1,107,192,1,170,192,7,190,240,7,190,240
298 DATA 29,255,252,29,255,252,125,255,255,113,255,207,64,127,3,64,170,3
299 DATA 64,170,3,64,40,3,64,40,3,112,0,15,60,0,60,0,0,0,0,0,0
300 DATA 0,0,0,0,0,0,20,0,0,95,0,1,107,192,1,170,192,7,190,240,7;190,240
301 DATA 29,255,252,29,255,252,125,255,255,113,255,207,64,127,3,64,170,3
302 DATA 66,170,131,66,170,131,66,170,131,112,170,15,60,170,60,0,40,0,0,0,0
303 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
304 DATA 0,0,0,0,0,0,0,0,0,0,0,0,85,85,223,87,126,234,85,255,170
305 DATA 87,126,234,85,255,170,0,0
306 REM
307 REM       PHEW!!... NOW YOU CAN RUN IT!.
```

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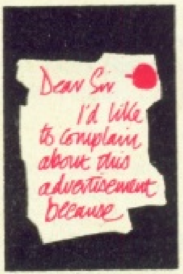
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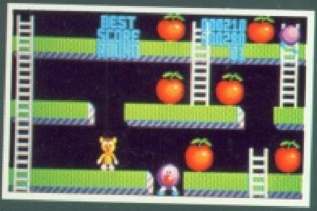

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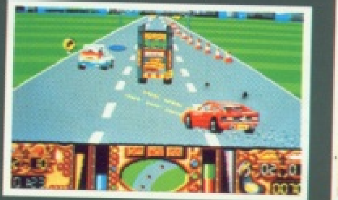

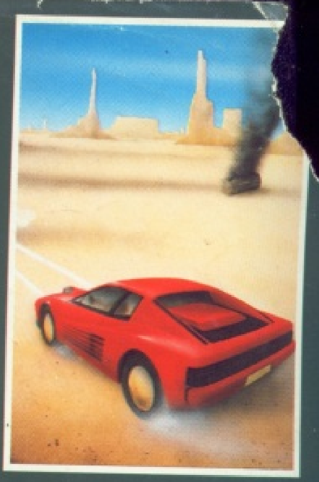

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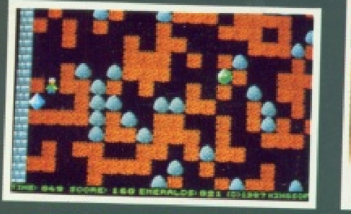

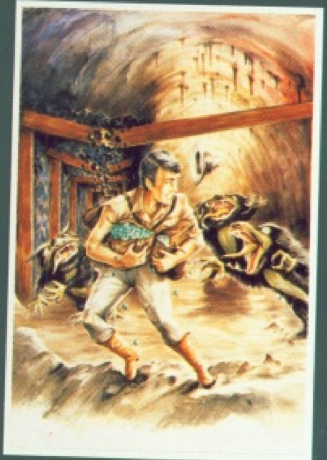

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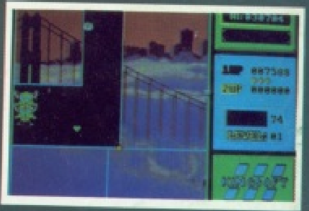

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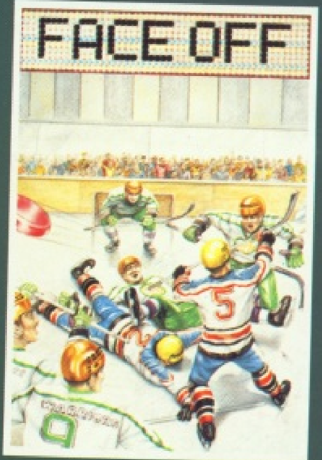

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WIN! AN AMIGA 5
AND A SPITTING I